HORIZON

AIR MEASUREMENT SERVICES, INC.

Horizon Test #: W07-039-FRB
Date Tested: April 20, 2004
Report Date: June 8, 2004
Revision Number: 0

ANNUAL EMISSIONS TEST OF LANDFILL GAS FLARE #2 BRADLEY LANDFILL

Permit to Operate F27480

Prepared for:

Waste Management Recycling and
Disposal Services of California, Inc.
9081 Tujunga Avenue, 2nd Floor
Sun Valley, California 91352

Prepared by:

Horizon Air Measurement Services, Inc.
996 Lawrence Drive, Suite 108
Newbury Park, California 91320

Regulatory Agency:

South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765

Robert D. Carrier
Project Manager

Richard J. Vacherot
Technical Director

PERMIT TO OPERATE

SCS-FS
Gas Plant

Permit No.
F27480
A/N 288680

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

05-10-009043358-PHI

LEGAL OWNER
OR OPERATOR:

BRADLEY LANDFILL AND RECYCLING CENTER
9081 TUJUNGA AVE P O BOX 39
SUN VALLEY, CA 91352

ID 050310

Equipment Location: 9227 TUJUNGA AVE, SUN VALLEY, CA 91352-1542

Equipment Description:

LANDFILL GAS FLARING SYSTEM NO. 2 CONSISTING OF:

1. INLET SEPARATOR, LANDFILL GAS, TEXAS PIPE FABRICATORS, 2'-6" DIA. X 13'-7" H.

2. PARTICULATE SCRUBBER, LANDFILL GAS, TEXAS PIPE FABRICATORS, 2'-6" DIA. X 9'-3" H.

3. TWO BLOWERS, LANDFILL GAS, EACH 30 H.P., 2083 SCFM MAXIMUM.

4. FLARE NO. 2, JOHN ZINK, 8'-0" DIA. X 50'-0" H., WITH A MULTI-JET BURNER, A PROPANE GAS PILOT, ELECTRIC IGNITER, UV FLAME SENSOR, THERMOCOUPLE WITH TEMPERATURE INDICATOR AND RECORDER, AUTOMATIC SHUTDOWN AND ALARM SYSTEM, AUTOMATIC COMBUSTION AIR REGULATING SYSTEM, TEMPERATURE CONTROLLER, FLAME ARRESTOR AND FIVE CONDENSATE INJECTION GUNS

Conditions:

1) OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2) THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3) THIS EQUIPMENT SHALL BE OPERATED AND MAINTAINED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.

4) THE FLARE SHALL BE EQUIPPED WITH A TEMPERATURE INDICATOR AND RECORDER WHICH MEASURES AND RECORDS THE GAS TEMPERATURE (IN DEGREES F) IN THE FLARE STACK. THE TEMPERATURE INDICATOR AND RECORDER SHALL OPERATE WHENEVER THE FLARE IS IN OPERATION.

ORIGINAL

088

CONTINUATION OF PERMIT TO OPERATE

5) WHENEVER THE FLARE IS IN OPERATION, EXCEPT DURING START-UP, A TEMPERATURE OF NOT LESS THAN 1400 DEGREES F, AS MEASURED BY THE TEMPERATURE INDICATOR AND RECORDER, SHALL BE MAINTAINED IN THE FLARE STACK. THE THERMOCOUPLE USED TO MEASURE THE TEMPERATURE SHALL BE ABOVE THE FLAME ZONE AND AT LEAST 3 FEET BELOW THE TOP OF THE FLARE SHROUD AND AT LEAST 0.6 SECONDS DOWNSTREAM OF THE BURNER.

6) A FLOW INDICATING AND RECORDING DEVICE SHALL BE MAINTAINED IN THE LANDFILL GAS SUPPLY LINE TO THE FLARE TO MEASURE AND RECORD THE QUANTITY OF LANDFILL GAS (IN SCFM) BEING BURNED.

7) THE TOTAL VOLUME OF LANDFILL GAS BURNED IN THE FLARE SHALL NOT EXCEED 2,083 CUBIC FEET PER MINUTE.

8) WHENEVER THE CONDENSATE INJECTION STATION IS IN OPERATION, NOT MORE THAN 5 GALLONS PER MINUTE OF CONDENSATE SHALL BE INJECTED INTO THE FLARE.

9) A FLOW INDICATOR AND RECORDER SHALL BE INSTALLED IN THE CONDENSATE INJECTION STATION AND SHALL OPERATE WHENEVER THE CONDENSATE INJECTION STATION IS IN OPERATION.

10) ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF DAY.

11) THE FLARE SHALL BE EQUIPPED WITH A FLARE FAILURE ALARM WITH AN AUTOMATIC BLOWER SHUT-OFF SYSTEM.

12) THE FLARE FAILURE ALARM WITH THE AUTOMATIC BLOWER SHUT-OFF SYSTEM SHALL BE TESTED ANNUALLY FOR PROPER OPERATION AND RESULTS RECORDED.

13) A PRESSURE DIFFERENTIAL INDICATOR SHALL BE MAINTAINED ACROSS THE FLAME ARRESTOR.

14) A SUFFICIENT NUMBER OF SIGHT GLASS WINDOWS SHALL BE INSTALLED IN THE FLARE TO ALLOW VISUAL INSPECTION OF THE FLAME AND THERMOCOUPLE LOCATION WITHIN THE FLARE AT ALL TIMES. ADEQUATE AND SAFE ACCESS SHALL BE PROVIDED FOR ALL PORTS UPON REQUEST BY AQMD PERSONNEL.

15) A SET OF FOUR SAMPLING PORTS SHALL BE INSTALLED IN THE FLARE SHROUD AND LOCATED AT LEAST TWO FEET ABOVE THE FLAME ZONE AND AT LEAST THREE FEET BELOW THE TOP OF THE FLARE SHROUD. EACH PORT SHALL BE INSTALLED AT 90 DEGREES APART AND SHALL CONSIST OF FOUR INCH COUPLINGS. ADEQUATE AND SAFE ACCESS TO ALL TEST PORTS SHALL BE PROVIDED BY THE APPLICANT WITHIN 24 HOURS OF A REQUEST BY THE AQMD TO CONDUCT A TEST.

16) A SAMPLING PORT, OR OTHER METHOD APPROVED BY THE AQMD, SHALL BE INSTALLED AT THE INLET GAS LINE TO THE FLARE.

ORIGINAL

CONTINUATION OF PERMIT TO OPERATE

17) THE APPLICANT SHALL CONDUCT A SOURCE TEST ANNUALLY OR PER THE APPROVED 1150.1 COMPLIANCE PLAN. THE TEST SHALL BE PERFORMED IN ACCORDANCE WITH AQMD APPROVED TEST PROCEDURES. THE TEST SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, A TEST OF THE FLARE FOR:
A. LANDFILL GAS COMPOSITION AND HEATING VALUE.
B. LANDFILL GAS FLOW RATE, SCFM (INLET)
C. TOTAL SULFUR COMPOUNDS AS H2S, PPMV (INLET)
D. TEMPERATURE, F (EXHAUST)
E. FLOW RATE, DSCFM (EXHAUST)
F. NOX, LBS/HR AND LBS/MMBTU (EXHAUST)
G. SOX, LBS/HR (EXHAUST)
H. CO, LBS/HR (EXHAUST)
I. PM, LBS/HR AND GR/DSCF (EXHAUST)
J. TOTAL NON-METHANE ORGANICS, LBS/HR, INLET AND EXHAUST
K. RULE 1150.1 TOXIC COMPOUNDS, PPMV, INLET AND EXHAUST

18) EMISSIONS OF NOX FROM THE FLARE SHALL NOT EXCEED 0.06 LBS MILLION BTU OF HEAT.

19) THE SKIN TEMPERATURE OF THE FLARE SHROUD WITHIN FOUR FEET OF ALL THE SOURCE TEST PORTS SHALL NOT EXCEED 250 DEGREES F. IF A HEAT SHIELD IS REQUIRED TO MEET THIS REQUIREMENT, ITS DESIGN SHALL BE APPROVED BY THE AQMD PRIOR TO CONSTRUCTION. THE HEAT SHIELD, IF REQUIRED TO MEET THE TEMPERATURE REQUIREMENT, SHALL BE IN PLACE WHENEVER A SOURCE TEST IS CONDUCTED BY THE DISTRICT.

20) ANY BREAKDOWN OR MALFUNCTION OF THE LANDFILL GAS FLARE STATION RESULTING IN THE EMISSION OF RAW LANDFILL GAS SHALL BE REPORTED TO THE AQMD WITHIN ONE HOUR OF OCCURRENCE, AND IMMEDIATE REMEDIAL MEASURES SHALL BE UNDERTAKEN TO CORRECT THE PROBLEM AND PREVENT FURTHER EMISSIONS INTO THE ATMOSPHERE.

21) EMISSIONS RESULTING FROM FLARE NO. 3 SHALL NOT EXCEED THE FOLLOWING:

ROG 0.66 LBS/HR
NOx 2.58 LBS/HR
SOx 3.16 LBS/HR
CO 2.37 LBS/HR
PM10 1.31 LBS/HR

22) ALL RECORDS SHALL BE KEPT FOR A PERIOD OF AT LEAST TWO (2) YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST. A RECORD OF THE HOURS OF FLARE OPERATION SHALL BE INCLUDED.

23) FLARE START-UP TIME SHALL NOT EXCEED 30 MINUTES. ANY OUTAGE THAT RESULTS IN THE SHUTDOWN OF THE FLARE SHALL NOT BE CONSIDERED A BREAKDOWN PROVIDING NO EMISSION OF RAW LANDFILL GAS OCCURS.

24) MITIGATION MEASURES, OTHER THAN THOSE INDICATED IN THESE CONDITIONS, WHICH ARE DEEMED APPROPRIATE BY AQMD PERSONNEL AS NECESSARY TO PROTECT THE COMFORT, REPOSE, HEALTH OR SAFETY OF THE PUBLIC, SHALL BE IMPLEMENTED UPON REQUEST.

ORIGINAL

PERMIT TO OPERATE

CONTINUATION OF PERMIT TO OPERATE

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M. Bailey/tk01
4/11/2000

ORIGINAL

HORIZON
AIR MEASUREMENT SERVICES, INC.

June 8, 2003

Mr. Bruce Matlock
Bradley Landfill and Recycling Center
9227 Tujunga Avenue
Sun Valley, California 91352

Dear Mr. Matlock

Please find enclosed three copies of the final report entitled "Annual Emissions Test of Landfill Gas Flare."

If you have any questions please call me at (805) 498-8781.

Sincerely,

HORIZON AIR MEASUREMENT SERVICES, INC.

Robert D. Carrier
Project Manager

RC:ng

996 LAWRENCE DR., SUITE 108, NEWBURY PARK, CALIFORNIA 91320 • (805) 498-8781 • FAX: (805) 498-3173

TABLE OF CONTENTS

1. INTRODUCTION

Under the Bradley Landfill and Recycling Center (BLRC) site specific Rule 1150.1 compliance plan, Waste Management Recycling and Disposal Services of California, Inc. is required to conduct an annual source test on landfill gas Flare #2 located at BLRC (Permit to Operate # F27480). Horizon Air Measurement Services, Inc. (Horizon) had been retained for this purpose.

All testing/analytical procedures conformed to those outlined in Horizon Test Plan No. W07-013-TP, which had been previously approved by the South Coast Air Quality Management District (SCAQMD). Horizon completed the source testing on April 20, 2004.

Two samples were taken for each parameter of interest (Table 1-1) during each test with the exception of trace organic compounds and reduced sulfur compounds, for which only one sample per location was collected. The results of the testing program, with respect to Permit limits, are provided in Section 2 - Results Summary.

A brief description of the flare and flare operating conditions during testing is provided in Section 3. Section 4 provides a summary of sampling/analytical procedures utilized. Section 5 provides a more detailed results summary/discussion.

Table 1-1
Compounds of Interest - Flare #2
Waste Management - Bradley Landfill
April 20, 2004

Parameter	Location	Method	Number of Samples Per Source
Total Non Methane Hydrocarbons	Inlet	SCAQMD Method 25.1	2
	Outlet	SCAQMD Method 25.3	2
Reduced Sulfur Compounds (C_1-C_3) Including H_2S	Inlet	SCAQMD Method 307.91 Equivalent	1
Speciated Organic Compounds	Inlet	Whole Air/GC-MS (1150 list)	1
	Outlet	Whole Air/GC-MS (1150 list)	1
Particulate Matter	Outlet	SCAQMD Method 5.1	2
Oxides of Nitrogen	Outlet	SCAQMD Method 100.1	2
Carbon Monoxide	Inlet	SCAQMD Method 25.1	2
	Outlet	SCAQMD Method 100.1	2
Oxygen	Inlet	SCAQMD Method 25.1	2
	Outlet	SCAQMD Method 100.1	2
Carbon Dioxide	Inlet	SCAQMD Method 25.1	2
	Outlet	SCAQMD Method 100.1	2
Methane	Inlet	SCAQMD Method 25.1	2
	Outlet	SCAQMD Method 25.3	2
Flow Rate/Temperature	Inlet	SCAQMD Method 2.3	2
	Outlet	SCAQMD Method 5.1/Calculated	2
Moisture	Outlet	SCAQMD Method 5.1	2
	Inlet	SCAQMD Method 4.1	2
BTU Content	Inlet	SCAQMD Method 25.1	2

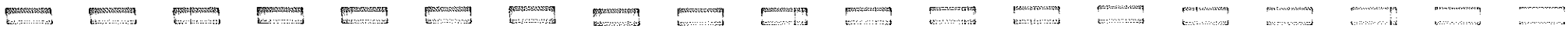
2. SUMMARY OF RESULTS

The results of the testing program conducted on Flare #2 are provided in Table 2-1. Emission rates of oxides of nitrogen, carbon monoxide, total particulate matter, total non-methane organics and total sulfur compounds (as SO_2) were within Permit limitations. A more detailed discussion of results is provided in Section 5.

Table 2-1
Summary of Results
Waste Management - Bradley Landfill
Flare #2
April 20, 2004

Parameter	Measured Emission Rate*	Permitted Emission Rate
Inlet Gas Flow Rate	1171 dscfm	2083 cfm
Oxides of Nitrogen, as NO_2	0.645 lb/hr 0.033 lb/MMBtu	2.58 lb/hr, 0.06 lb/MMBtu
Total Particulate Matter	0.26 lb/hr	1.31 lb/hr
Carbon Monoxide	<0.63 lb/hr	2.37 lb/hr
Total Non Methane Organics, as CH_4	0.081 lb/hr	0.66 lb/hr
Total Non Methane Organics, as C_6	1.3 ppm C_6 @ 3% O_2	20 ppm C_6 @ 3% O_2 (Rule 1150.1)
Total Sulfur Compounds, as SO_2	0.42 lb/hr	3.16 lb/hr

* Measured emission rates shown are the average of two test runs (samples).



3. FLARE DESCRIPTION AND OPERATION

3.1 Flare Description

The landfill gas flare consists of an insulated steel cylinder 50 feet high and 96 inches inside diameter (see Figure 3-1). Operating flow rate is limited, by the Permit, to 2083 cubic feet per minute (3,000,000 cf/day). Landfill gas flow rate was continuously monitored and recorded on a strip chart by the facility. Flare operating temperature during the test was set at 1600 °F. Flare temperature was continuously monitored by the facility.

Condensate flow rate is limited to five gallons per minute by the Permit. The source test was conducted at a condensate flow rate of approximately 1.1 gallons per minute.

Strip chart records of the flare operating conditions during testing are provided in Appendix G.

3.2 Sample Location

Flare exhaust samples were obtained from each of two ports positioned at right angles, located five feet from the top of the flare and approximately 45 feet above ground level.

Inlet samples were obtained from the 10-inch diameter (ID) landfill gas line supplying the flare at least two diameters downstream and at least one diameter upstream of any flow disturbance.

3.3 Flare Operation During Testing

The flare was operated uner the following conditions during the source test period:

	Run 1	**Run 2**
Flare Temperature -	1571 °F	1570 °F
Landfill Gas Flow Rate -	1842 scfm	1835 scfm
Condensate Injection Rate -	0.0 gpm	1.44 gpm

Raw process data is included in Appendix G, Process Data.

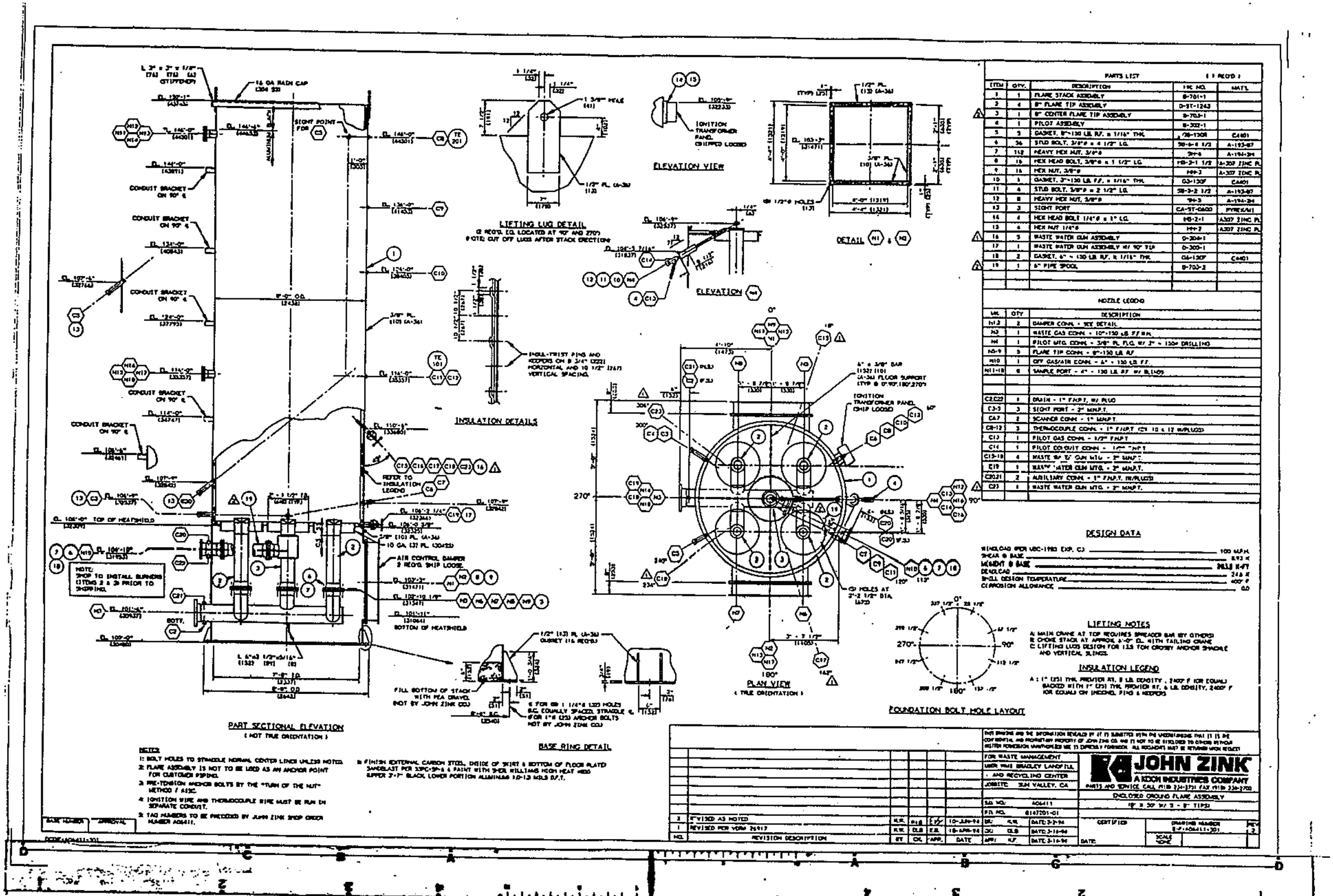

PART SECTIONAL ELEVATION
LIFTING LUG DETAIL
ELEVATION VIEW
INSULATION DETAILS
PLAN VIEW
DESIGN DATA
LIFTING NOTES
INSULATION LEGEND
FOUNDATION BOLT HOLE LAYOUT
BASE RING DETAIL
PARTS LIST
NOZZLE LEGEND
JOHN ZINK
A KOCH INDUSTRIES COMPANY
ENCLOSED GROUND FLARE ASSEMBLY

Figure 3-1

4. SAMPLING/ANALYSES

The sampling/analytical program had been designed to quantify the parameters of interest outlined in Table 1-1.

4.1 Sample Location

4.1.1 Flare Exhaust

At the flare exhaust 24 sample points (12 per diameter), determined in accordance with Method 1, were utilized for the determination of the following compounds:

- particulate matter
- NO_X
- CO
- O_2/CO_2
- flow rate
- moisture

The exact locations of the sampling points are provided in Appendix D, Field Data Sheets. A description of SCAQMD Method 1.1 is provided in Appendix A.

One sample points at the center of the stack was utilized for the collection of the following compounds:

- speciated organic compounds
- total non methane hydrocarbons
- methane

4.1.2 Landfill Gas Supply Line

Eight sample points, chosen in accordance with SCAQMD Method 1.1, were used to gather velocity data.

A single sample point was utilized for the collection of the following compounds:

- total non methane hydrocarbons
- methane
- CO
- CO_2/O_2
- reduced sulfur compounds
- speciated organic compounds
- BTU content
- moisture

4.2 Moisture

4.2.1 Inlet - SCAQMD Method 4.1

Landfill gas moisture content was determined using SCAQMD Method 4.1. Two, one hour test runs were conducted in conjunction with the outlet particulate and SCAQMD Method 100.1 testing. A description of SCAQMD Method 4.1 is provided in Appendix A.

4.2.2 Outlet - SCAQMD Method 5.1

Moisture content of the flare exhaust was determined using SCAQMD Method 4.1 in conjunction with SCAQMD Method 5.1, as detailed in Appendix A.

4.3 Flow Rate

4.3.1 Inlet

Landfill gas flow rate was determined using SCAQMD Method 2.3. A description of SCAQMD Method 2.3 is provided in Appendix A.

4.3.2 Outlet - SCAQMD Method 5.1

The landfill flare flow rate was monitored in conjunction with SCAQMD Method 5.1, as detailed in Appendix A. However, since the flare exhaust velocity was below the applicable limit (0.05 in. WG ΔP) of SCAQMD Method 2.1/5.1, the exhaust flow rate was calculated stoichiometrically based upon the landfill gas composition and stack dilution.

4.4 Particulate Matter (Outlet) - SCAQMD Method 5.1

Horizon conducted two, 60-minute test runs on the flare exhaust for particulate matter determination in accordance with SCAQMD Method 5.1 protocol. Twenty-four traverse points were utilized for the collection of particulate matter at the flare exhaust. A description of SCAQMD Method 5.1 is provided in Appendix A. Stack gases were withdrawn through an integral quartz nozzle and probe.

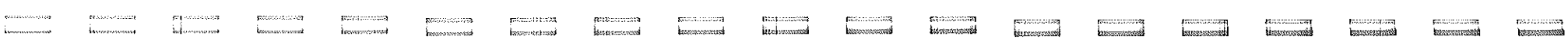
4.5 Oxides of Nitrogen, Carbon Monoxide, Carbon Dioxide, Oxygen (Continuous Emissions Monitoring) - SCAQMD Method 100.1

Two, 60-minute test runs were conducted at the flare exhaust. Twenty-four sample points were utilized. All sampling was performed under the guidelines of SCAQMD Method 100.1 as detailed in Appendix A.

4.6 Hydrogen Sulfide (H_2S), and C_1 - C_3 Sulfur Compounds (Inlet) - SCAQMD Method 307.91 Equivalent

Hydrogen sulfide and C_1 - C_3 sulfur compound samples were collected at the inlet of the flare using the Tedlar bag collection system depicted in Appendix A. All system components coming in contact with the landfill gas were Teflon.

Hydrogen sulfide and C_1 - C_3 sulfur compounds were analyzed using a Method 307.91 equivalent by AtmAA, Inc. Equivalency had been formally granted by SCAQMD to AtmAA, Inc. for this Method.



4.7 Speciated Organic Compounds - SCAQMD Rule 1150.1 List

4.7.1 Inlet

Speciated organic compounds were collected at the flare inlet of the landfill gas using the Tedlar bag collection system depicted in Appendix A. All system components coming in contact with the landfill gas were Teflon or stainless steel. Speciated organic compounds (SCAQMD Rule 1150.1 list) were identified and quantified using GC/MS analytical procedures.

4.7.2 Outlet

Speciated organic compound samples were collected in conjunction with the particulate/CEM testing at the outlet using Tedlar bag method as depicted in Appendix A. Each sample was then analyzed for speciated organic compounds (SCAQMD Rule 1150.1 list) using GC/MS procedures.

4.8 Total Non Methane Hydrocarbons, Methane, Carbon Dioxide and Carbon Monoxide

4.8.1 Inlet - SCAQMD Method 25.1

Total non methane hydrocarbons, methane, CO_2 and CO concentration were determined at the flare inlet from duplicate samples using SCAQMD Method 25.1. A description of SCAQMD Method 25.1 is provided in Appendix A.

4.8.2 Outlet - SCAQMD Method 25.3

Duplicate samples were obtained for total non methane hydrocarbon and methane concentration determination using SCAQMD Method 25.3. A description of SCAQMD Method 25.3 is provided in Appendix A.

5. RESULTS DISCUSSION

Detailed results of the criteria testing conducted on Flare #2 on April 20, 2004 are presented in Table 5-1. Speciated organic compound destruction efficiencies and emission rates are provided in Table 5-2.

Since the flare exhaust velocity was below the applicable range (>0.05 ΔP inches water gauge) of SCAQMD Method 2.1, the flare exhaust flow rate for each test run was calculated stoichiometrically based upon the composition of the landfill gas and the exhaust stack dilution. Oxide of sulfur emission rate was calculated based upon the landfill gas total sulfur compound concentration and flow rate (see Appendix B).

No sampling or analytical problems or Method deviations were encountered during any phase of the test program.

Table 5-1
Summary of Results
Waste Management - Bradley Landfill
Flare #2
April 20, 2004

	LANDFILL GAS			FLARE EXHAUST		
Run Number	1	2	Avg.	1	2	Avg.
STACK GAS CHARACTERISTICS						
Temperature, degrees F	105	125	115	1592	1607	1599
Moisture, %	5.1	5.6	5.3	9.7	13.3	11.5
Flow Rate, acfm	1390	1379	1385			
Flow Rate, dscfm	1199	1144	1171	7456 *	6787 *	7121 *
Fixed Gases						
Oxygen, %	3.79	-	3.79	10.44	9.93	10.19
Carbon Dioxide, %	26.20	-	26.20	8.88	9.27	9.07
Methane, %	27.95	-	27.95	0.00	0.00	0.00
BTU Value, Btu/scf	282	-	282	-	-	-
EMISSIONS						
Oxides of Nitrogen						
ppm	-	-	-	10.6	14.5	12.6
ppm @ 3 % O2	-	-	-	18.1	23.7	20.9
lb/hr	-	-	-	0.575	0.716	0.645
lb/MMBtu	-	-	-	0.028	0.037	0.033
Carbon Monoxide						
ppm	-	-	-	< 20	< 20	< 20
ppm @ 3 % O2	-	-	-	< 34	< 33	< 33
lb/hr	-	-	-	< 0.66	< 0.60	< 0.63
lb/MMBtu	-	-	-	< 0.033	< 0.031	< 0.032
Total Particulate Matter						
gr/dscf	-	-	-	0.0048	0.0035	0.0042
lb/hr	-	-	-	0.30	0.21	0.26
Total Non-Methane Hydrocarbons (Reactive Organic Compounds)						
ppm, as Methane	2416	-	2416	4.50	-	4.50
lb/hr, as Methane	7.15	-	7.15	0.081	-	0.081
Sulfur Compounds						
Hydrogen Sulfide, ppm	34.2	-	34.2	< 0.50	-	< 0.50
Total Sulfur, ppm as H2S	35.3	-	35.3	-	-	-
Oxides of Sulfur**						
lb/hr	-	-	-	0.42	-	0.42

* Flow Rate calculated stoichiometrically
** Calculated from sulfur balance

Table 5-2
Trace Organic Species
Destruction Efficiency Results
Waste Management - Bradley Landfill
Flare #2
April 20, 2004

Species	Inlet		Outlet		Destruction Efficiency (%)
	Concentration (ppb)	Emission Rate (lb/hr)	Concentration (ppb)	Emission Rate (lb/hr)	
Hydrogen Sulfide	34400	2.17E-01	< 500	< 1.92E-02	> 91.16
Benzene	903	1.30E-02	< 0.2	< 1.76E-05	> 99.87
Benzychloride	< 50	< 1.18E-03	< 0.8	< 1.14E-04	NA
Chlorobenzene	259	5.42E-03	< 0.2	< 2.54E-05	> 99.53
Dichlorobenzenes	944	2.57E-02	< 1.1	< 1.82E-04	> 99.29
1,1-dichloroethane	77.3	1.42E-03	< 0.2	< 2.23E-05	> 98.43
1,2-dichloroethane	< 20	< 3.67E-04	< 0.2	< 2.23E-05	NA
1,1-dichloroethylene	< 30	< 5.39E-04	< 0.2	< 2.18E-05	NA
Dichloromethane	< 30	< 4.72E-04	0.90	8.61E-05	NA
1,2-dibromoethane	< 30	< 1.04E-03	< 0.2	< 4.23E-05	NA
Perchloroethene	648	2.84E-02	< 0.1	< 2.67E-05	> 99.91
Carbon tetrachloride	< 30	< 8.56E-04	< 0.1	< 1.73E-05	NA
Toluene	3950	6.73E-02	0.91	9.43E-05	99.86
1,1,1-trichloroethane	< 20	< 4.93E-04	< 0.1	< 1.50E-05	NA
Trichloroethene	142	2.30E-02	< 0.1	< 1.47E-05	> 99.94
Chloroform	< 20	< 4.41E-04	< 0.1	< 1.34E-05	NA
Vinyl Chloride	947	1.10E-02	< 0.2	< 1.41E-05	> 99.87
m xylenes	11500	2.26E-01	0.42	5.01E-05	99.98
o+p xylene	2070	4.06E-02	< 0.2	< 2.39E-05	> 99.94
TNMHC	2416337	7.16E+00	4500	8.11E-02	98.87

Note: All values preceded by "<" are below the detection limit - reported values are detection limit values.
NA--Not applicable: Destruction efficiency cannot be calculated since both inlet and outlet values are below the detection limit.

APPENDIX A - Sampling and Analytical Methods

Method:	**Stack Gas Velocity and Volumetric Flow Rate From Small Stacks or Ducts**
Applicable for Methods:	SCAQMD Method 2.3
Principle:	The average gas velocity in a stack gas is determined from the gas density and from measurement of the average velocity head with a standard pitot tube.
Sampling Procedure:	The velocity head and temperature is measured at the traverse points specified by SCAQMD Method 1.2. The static pressure in the stack and the atmospheric pressure is determined. The stack gas molecular weight is determined from independent measurements of O_2, CO_2 and H_2O concentrations.
Sample Recovery: and Analyses:	The stack gas velocity is determined from the measured average velocity head, the measured dry concentrations of O_2 and CO_2 and the measured concentration of H_2O. The velocity is determined from the following set of equations:

Where,

ΔP = velocity head, inches in H_2O
Ts = gas/temperature, degrees R
Ps = absolute static pressure
Mwd = dry molecular weight
Mw = molecular weight
Cp = pitot flow coefficient

Dry molecular weight of stack gas

$$Mwd = 0.44\ (\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2 + \%CO)$$

Molecular weight of stack gas, wet basis

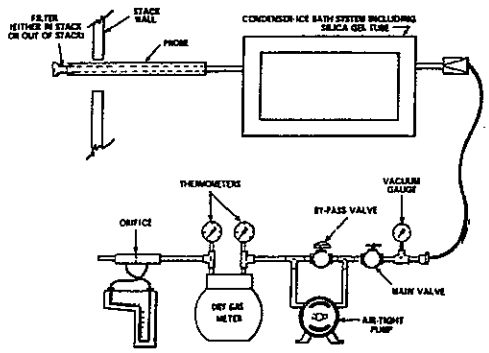
$$M_w = (M_{wd}\ x\ M_d) + 18\ (1 - M_d)$$

$$Where,\ M_d = \frac{100 - Bws}{100}$$

Stack gas velocity

$$(V_s)\ avg. = (5130)\ C_p\ x\ \sqrt{\Delta P}\ avg.\ x\ \sqrt{T_s}\ x\ \left(\frac{1}{P_s\ x\ M_w}\right)^{1/2}$$

Method:	**Determination of Moisture in Stack Gases**
Applicable for Methods:	EPA Method 4, ARB 1-4, SCAQMD Method 4.1
Principle:	A gas sample is extracted at a constant rate from the source; moisture is removed from the stream and determined either volumetrically or gravimetrically.
Sampling Procedure:	Set up train as shown in the following figure. Sample is drawn at a constant rate through a sufficiently heated probe. The probe is connected to the impinger train by Teflon or glass tubing. The train consists of two greenburg smith impinger (SCAQMD 4.1) or one modified and 1 greenburg smith impinger (CARB & EPA) each containing 100 ml of water, an empty impinger as a knock-out and an impinger containing silica gel to protect the pump from moisture.



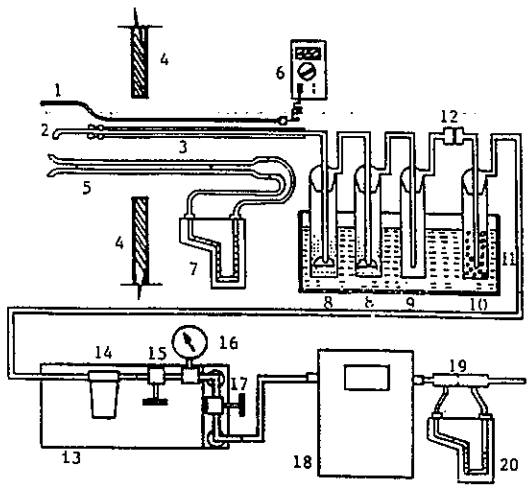
Sample Recovery: and Analyses:	Following testing, moisture content is determined gravimetrically or volumetrically from initial and final impinger contents weights or volume.

Method: **Determination of Particulate Matter Emissions From Stationary Sources Using a Wet Impingement Train**

Reference: SCAQMD Method 5.1

Principle: Stack gas is withdrawn isokinetically from the source through a sample train. Particulate matter is collected in impingers containing deionized water and on a back-up filter. The impingers are contained in an ice bath to maintain a sampled gas temperature of approximately 15° C (60° F). The filter is not heated.

Sampling Procedure: The sampling train is shown in the figure below. The sample is drawn isokinetically through a glass or quartz probe (hi-temp). The probe is connected to an impinger train by Teflon tubing. The train consists of two Greenburg-Smith impingers which contain 100 ml of DI water; an empty impinger as a knock-out; and an impinger containing silica gel to protect the pump from moisture. Sample is withdrawn isokinetically from each predetermined sample point (determined using SCAQMD Method 1.1) through the sample train, which is followed by a vacuum line, a pump, a dry gas meter and a calibrated orifice.



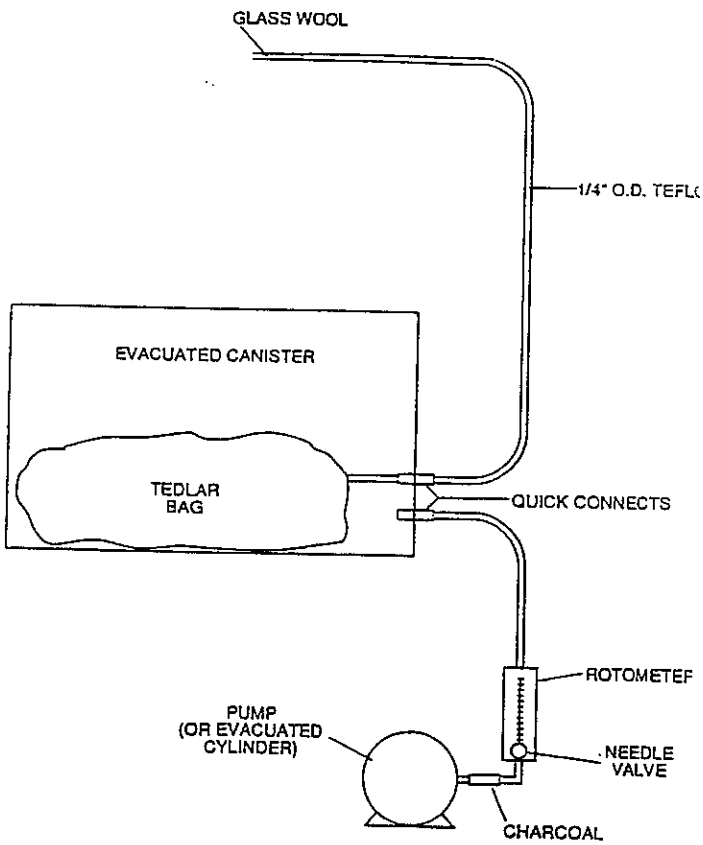
1. Temperature Sensor
2. Nozzle
3. Glass Lined Stainless Steel Probe
4. S-type Pitot Tube
5. Stack Wall
6. Temperature Sensor Meter
7. Pitot Tube Inclined Manometer
8. Impinger with 100 ml H_2O
9. Empty Bubbler
10. Bubbler with Silica Gel
11. Ice Bath
12. Filter
13. Sealed Pump (Leak Free)
14. Filter for Pump
15. Metering Valve
16. Vacuum Gauge
17. By-pass Valve
18. Temperature Compensated Dry Gas Meter
19. Orifice

Sample Recovery: The moisture content is determined either gravimetrically or volumetrically from initial and final impinger weights or volume. Then the filter, probe/impinger rinse (including nozzle rinse, liner rinse, impinger contents and rinses) and silica gel are recovered into Containers #1, #2 and #3, respectively.

Analytical Procedure: The aqueous sample is filtered through a tared fiberglass filter. An organic extraction is performed on the resulting solution using methylene chloride. Both the extraction filter and sample train filter are desiccated then measured gravimetrically. The organic extract and aqueous catch are evaporated, desiccated and measured gravimetrically.

If significant levels of sulfur compounds are present in the stack, each sample fraction is analyzed by acid-base titration for acid sulfate content and by barium-thorin titration for sulfate content.

Method:	**Carbon Monoxide by SCAQMD Micro Total Carbon Analyses**
Reference:	SCAQMD Method 10.1 (Tedlar Bag)
Principle:	A Tedlar bag is filled with flue gas at a constant rate. The bag contents are analyzed by total combustion analyses/flame ionization detection for carbon monoxide.
Sampling Procedure:	A gas sample is collected by evacuating the canister, see figure, at a constant rate over each test run using a rotameter/needle valve and a diaphragm pump. This causes the Tedlar bag to fill with stack gas at a constant rate while maintaining sample integrity. Prior to each sampling run, the evacuated canister (containing the Tedlar bag) is leak checked at 2" Hg vacuum. The sample train upstream of the Tedlar bag is then purged with stack gas. At the conclusion of each test run, each Tedlar bag sample is sealed and stored in an opaque container pending analysis.
Analytical Procedure:	Carbon monoxide concentration from the sample is determined using the SCAQMD Total Combustion Analysis (TCA) procedure.



Method:	**Determination of Total Gaseous Non-Methane Organic Emissions as Carbon**
Reference:	SCAQMD Method 25.1
Principle:	A sample of flue gas is drawn through a condensate trap and into an evacuated 12 liter tank. Volatile organic compounds (VOC), as total gaseous non-methane organics (TGNMO), are determined by combining results from independent analysis of condensate in the traps and gases in the tanks.
Sampling Procedure:	Duplicate gas samples are withdrawn from a source at a constant rate through condensate traps immersed in dry ice followed by evacuated 12 liter (nominal) tanks. Heavy organic components condense as liquids and solids in the condensate traps. Lighter components pass as gases through the traps into the tanks. The combined results from tanks and trap analyses are used to determine a qualitative and quantitative expression of the effluent gas stream. Duplicate sampling is designed into the system to demonstrate precision. The sampling apparatus is checked for leaks prior to the sampling program by attaching the probe end to an absolute pressure gauge and vacuum pump in series. The sample lines were evacuated to less than 10 mm Hg and the gauge shutoff valve is then closed. The sample lines are deemed to be leak-free if no loss of vacuum occurs as indicated by the vacuum gauge. During sampling the tank pressures are monitored with a 0-30 inch vacuum gauge to ensure integrated sampling. The final vacuum of each sample is measured using a slack tube manometer. The sample is then pressurized to 800 mm Hg absolute with ultrapure nitrogen. Each sample is then analyzed using the SCAQMD TCA procedure for total non methane hydrocarbons.
Analytical Procedure:	Condensate traps are analyzed by first stripping carbon dioxide (CO_2) from the trap. The organic contents are then removed and oxidized to CO_2. This CO_2 is quantitatively collected in an evacuated vessel and measured by injection into a flame ionization detection/total combustion analysis (FID/TCA) system. The organic content of the sample fraction collected in each tank is measured by injecting a portion into the FID/TCA analysis system which uses a two phase gas chromatography (GC) column to separate carbon monoxide (CO), methane (CH_4) and carbon dioxide (CO_2) from each other and from the total gaseous non-methane organics (TGNMO) which are eluted as backflush. All eluted components are first oxidized to CO_2 by a hopcalite catalyst and then reduced to methane by a nickel catalyst. The resulting methane is detected using the flame ionization detector. A gas standard containing CO, CH_4, CO_2 and propane, traceable to NBS, is used to calibrated the FID/TCA analysis system.

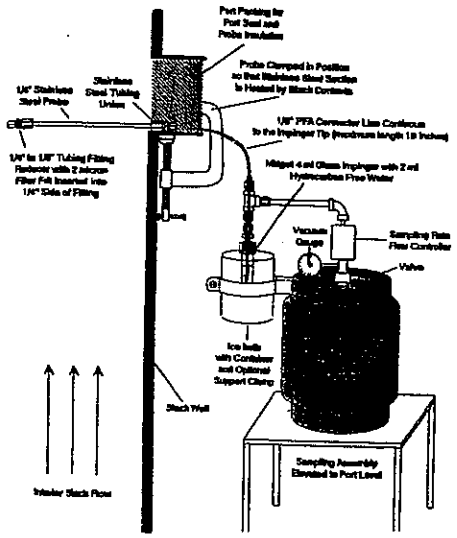
Method: **Determination of Total Gaseous Non-Methane Organic Emissions as Carbon**

Reference: SCAQMD Method 25.3

Principle: A sample of flue gas is drawn through a condensate trap (mini-impinger) and into an evacuated six liter SUMMA canister. Volatile organic compounds (VOC), as total gaseous non-methane organics (TGNMO), are determined by combining results from independent analysis of condensate in the traps and gases in the SUMMA canisters.

Sampling Procedure: Duplicate gas samples are withdrawn from a source at a constant rate through condensate traps immersed in an ice bath followed by evacuated six liter (nominal) SUMMA canisters. Heavy organic components condense as liquids and solids in the condensate traps. Lighter components pass as gases through the traps into the canisters. The combined results from canisters and mini-impinger analyses are used to determine a qualitative and quantitative expression of the effluent gas stream. Duplicate sampling is designed into the system to demonstrate precision.

The sampling apparatus is checked for leaks prior to the sampling program by capping the end of the sample probe. The sample flow valve is then opened and then closed to introduce vacuum to the system. The vacuum drop should then cease numerically above 10 in. Hg. A cease in movement of the vacuum gauge for a period of ten minutes indicates an acceptable leak check. When sampling is initiated, the vacuum gauge must indicate a canister vacuum of greater than 28 in. Hg. Immediately after sampling a post-test leak check is performed, followed by a rinse of the PFA line into the condensate trap with 0.5 to 1.0 ml of hydrocarbon free water.



Analytical Procedure: Condensate traps are analyzed for total organic carbon by liquid injection into an infrared total organic carbon analyzer.

The organic content of the sample fraction collected in each canister is measured by injecting a portion into the FID/TCA analysis system which uses a two phase gas chromatography (GC) column to separate carbon monoxide (CO), methane (CH_4) and carbon dioxide (CO_2) from each other and from the total gaseous non-methane organics (TGNMO) which are eluted as backflush. All eluted components are first oxidized to CO_2 by a hopcalite catalyst and then reduced to methane by a nickel catalyst. The resulting methane is detected using the flame ionization detector. A gas standard containing CO, CH_4, CO_2 and propane, traceable to NBS, is used to calibrated the FID/TCA analysis system.

CONTINUOUS EMISSIONS MONITORING SYSTEM - TRUCK

SCAQMD Method 100.1

The continuous emissions monitoring system consists of a Thermo Electron Model 10AR chemiluminescence NO/NO $_x$ analyzer, a Teledyne electro chemical O_2 analyzer, a Thermo Electron Model 48H CO gas filter correlation analyzer and a Horiba PIR 2000 non dispersive infrared CO_2 analyzer. All analyzer specifications are provided in Table 1. All concentrations are determined on a dry basis. Concentrations of NO_X, CO, O_2 and CO_2 are continuously recorded on a Linseis 10-inch strip chart recorder and a Strawberry Tree Data Acquisition System (DAS). The extractive monitoring system conforms with the requirements of SCAQMD Method 100.1.

The sampling probe (heated to 250°F), constructed of 1/2 inch-diameter 316 stainless steel, is connected to a condenser with a six foot length of 3/8 inch Teflon line (heated to 250°F). A Nupro stainless steel filter (10 micron) is connected at the tip of the probe and maintained at stack temperature.

The condenser consists of a series of two stainless steel moisture knock-out bottles immersed in an ice water bath. The system is designed to minimize contact between the sample and the condensate. Condensate is continuously removed from the knock-out bottles via a peristaltic pump. The condenser outlet temperature is monitored either manually at 10-minute intervals or on a strip chart recorder/DAS system. The sample exiting the condenser is then transported through a filter, housed in a stainless steel holder, followed by 3/8 inch O.D. Teflon tubing and a Teflon coated (or stainless steel/viton) diaphragm pump to the sample manifold. The sample manifold is constructed of stainless steel tubing and directs the sample through each of five rotameters to the NO_X monitor, O_2 monitor, CO monitor, CO_2 monitor and excess sample exhaust line, respectively. Sample flow through each channel is controlled by a back pressure regulator and by stainless steel needle valves on each rotameter. All components of the sampling system that contact the sample are composed of stainless steel, Teflon or glass.

The calibration system is comprised of two parts: the analyzer calibration and the system bias check. The calibration gases are, at a minimum, certified to $\pm 1\%$ by the manufacturer. Where necessary to comply with the reference method requirements, EPA Protocol 1 gases are used. The cylinders are equipped with pressure regulators which supply the calibration gas to the analyzers at the same pressure and flow rate as the sample. The selection of zero, span or sample gas directed to each analyzer is accomplished by operation of the zero, calibration or sample selector knobs located on the main flow control panel.

For SCAQMD Method 100.1 testing, the following procedures are conducted before and after each series of test runs:

Leak Check:

The leak check is performed by plugging the end of the sampling probe, evacuating the system to at least 20 inches of Hg. The leak check is deemed satisfactory if the system holds 20 inches of Hg vacuum for five minutes with less than one inch Hg loss.

Linearity Check:

The NO_X, CO, CO_2 and O_2 analyzers linearity check is performed by introducing, at a minimum, zero gas, mid range calibration gas (40-60% scale) and high range calibration gas (80-100% scale). Instrument span value is set on each instrument with the mid range gas. The high range calibration gas (80-100% scale) is then introduced into each instrument without any calibration adjustments. Linearity is confirmed, if all values agree with the calibration gas value to within 2% of the range.

Stratification Check:

A stack stratification check is performed (pre-test only) by traversing the stack with the appropriate number of traverse alternately with the reference point (center). If the gas composition is homogenous, $< 10\%$ variation between any traverse points in the gas stream and the normalized average point, single point gas sampling is performed at the reference point. If stratification exceeds the 10% criteria, then the stack cross section is traversed during sampling.

System Bias Check:

The system bias check is accomplished by transporting the same gases used to zero and span the analyzers to the sample system as close as practical to the probe inlet. This is accomplished by opening a valve located on the probe, allowing the gas to flow to the probe and back through the moisture knockout and sample line to the analyzers. During this check the system is operated at the normal sampling rate with no adjustments. The system bias check is considered valid if the difference between the gas concentration exhibited by the measurement system which a known concentration gas is introduced at the sampling probe tip and when the sample gas is introduced directly to the analyzer, does not exceed ± 5% of the analyzer range.

Response Time:

Response time (upscale and downscale) for each analyzer is recorded during the system bias check. Upscale response time is defined as the time it takes the subject analyzer gas to reach 95% of the calibration gas value after introducing the upscale gas to the sample bias calibration system. Downscale response time is defined as the time it takes the subject analyzer to return to zero after the zero gas is introduced into the sample system bias calibration system.

NO_x Conversion Efficiency

The NO_x analyzer NO_2 conversion efficiency is determined by injecting a NO_2 gas standard directly into the NO_x analyzer (after initial calibration). The analyzer response must be a least 90% of the NO_2 standard gas value.

NO_2 Converter Efficiency (alternate method)

The mid level NO gas standard is directly injected into a clean leak-free Tedlar bag. The bag is then diluted 1:1 with air (20.9 % O_2). The bag is immediately attached to the NQsample line. The initial NO_x concentration is recorded on the strip chart. After at least 30 minutes the Tedlar bag is reattached to the NO_x sample line. Analyzer response must be at 98% of the initial Tedlar bag NO_x value to be acceptable.

In between each sampling run the following procedures are conducted:

Zero and Calibration Drift Check:

Upon the completion of each test run, the zero and calibration drift check is performed by introducing zero and mid range calibration gases to the instruments, with no adjustments (with the exception of flow to instruments) after each test run. The analyzer response must be within ± 3% of the actual calibration gas value.

Analyzer Calibration:

Upon completion of the drift test, the analyzer calibration is performed by introducing the zero and mid range gases to each analyzer prior to the upcoming test run and adjusting the instrument calibration as necessary.

System Bias Check

(same as above)

A schematic of the sample system and specific information of the analytical equipment is provided in the following pages.

TABLE 1

CONTINUOUS EMISSIONS MONITORING LABORATORY - TRUCK

NO_X CHEMILUMINESCENT ANALYZER -- THERMO ELECTRON MODEL 10 A

Response Time (0-90%)	1.5 sec -- NO mode/1.7 sec -- NO_x mode
Zero Drift	Negligible after 1/2 hour warmup
Linearity	± 1% of full scale
Accuracy	Derived from the NO or NO_2 calibration gas, ± 1% of full scale
Operating Ranges (ppm)	2.5, 10, 25, 100, 250, 1000, 2500, 10000
Output	0-1 volt

O_2 ANALYZER, FUEL TYPE -- TELEDYNE MODEL 326RA

Response Time (0-90%)	60 seconds
Accuracy	± 1% of scale at constant temperature ± 1% of scale of ± 5% of reading, whichever is greater, over the operation temperature range.
Operating Ranges (%)	0-5, 0-25
Output	0-1 volt

O_2 ANALYZER, PARAMAGNETIC -- SERVOMEX MODEL 1400B

Response Time (0-90%)	15 seconds
Accuracy	0.1% oxygen
Linearity	± 1% scale
Operating Ranges (%)	0-25, 0-100
Output	0-1 volt

CO GAS FILTER CORRELATION -- THERMO ELECTRON MODEL 48H

Response Time (0-95%)	1 minute
Zero Drift	± 0.2 ppm CO
Span Drift	Less than 1% full scale in 24 hours
Linearity	± 1% full scale, all ranges
Accuracy	± 0.1 ppm CO
Operating Ranges (ppm)	50, 100, 250, 500, 1000, 2500, 5000, 10,000, 25,000, 50,000
Output	0-1 volt

TABLE 1 (Cont.)

CO_2 INFRARED GAS ANALYZER -- HORIBA - MODEL PIR 2000

Response Time (0-90%)	5 seconds
Zero Drift	± 1% of full scale in 24 hours
Span Drift	± 1% of full scale in 24 hours
Linearity	± 2% of full scale
Resolution	Less than 1% of full scale
Operating Ranges (%)	0-5, 0-15, 0-25
Output	0-1 volt

SO_2 PULSED FLOURESCENT - TECO - MODEL 43C-HL

Response Time	80 seconds
Zero Drift	± 1%
Span Drift	± 1%
Linearity	± 1%
Resolution	± 1%
Operating Ranges	5, 10, 20, 50, 100, 200, 500, 1000, 2000, 5000
Output	0-10 volt

RATFISCH FID TOTAL HYDROCARBON ANALYZER -- MODEL 55CA

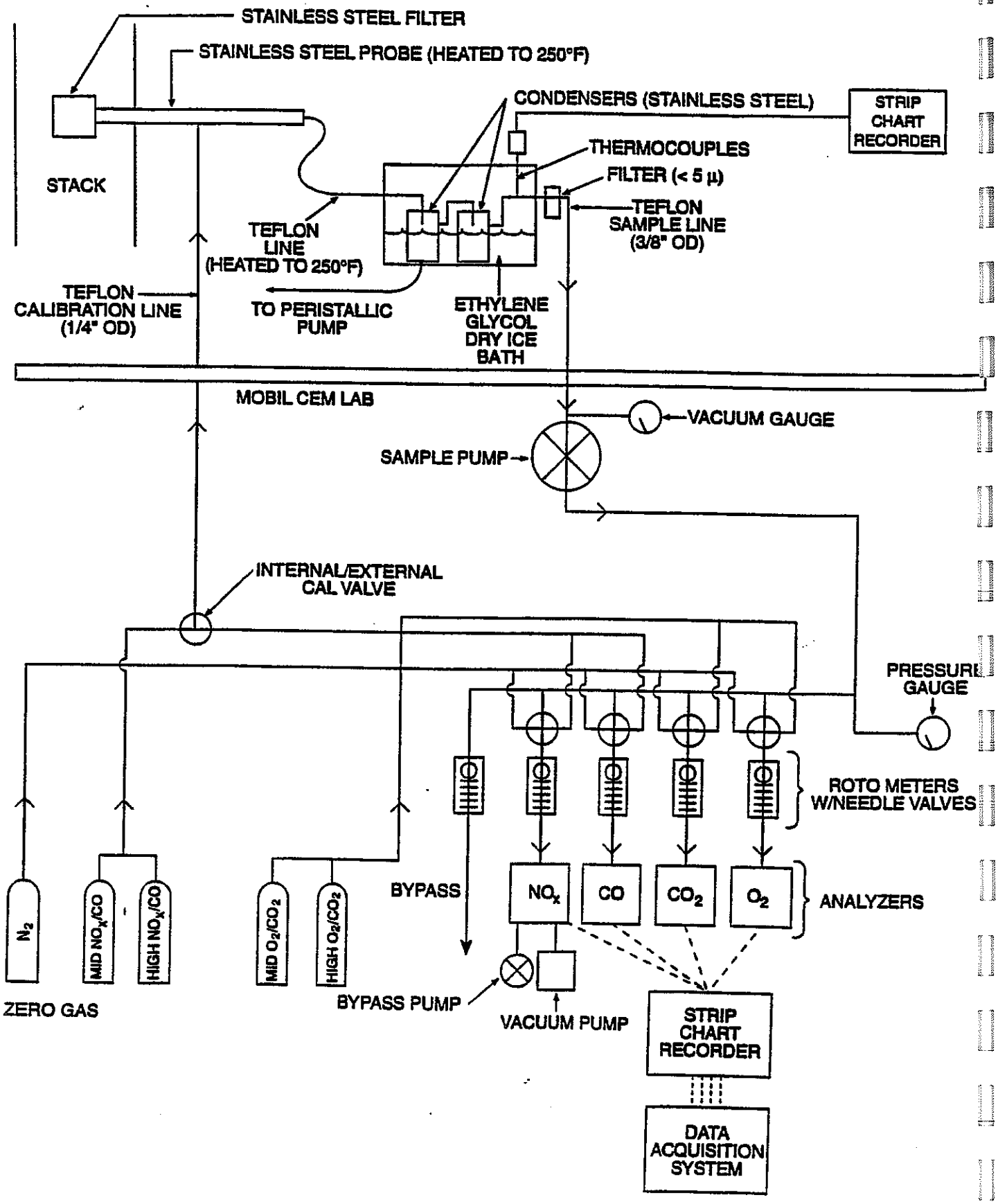
Response Time (0-90%)	5 seconds
Zero Drift	± 1% full scale in 24 hours
Span Drift	± 1% full scale in 24 hours
Linearity	± 1% full scale - constant
Accuracy	± 1% full scale at constant temp.
Operating Ranges (ppm)	10, 100, 1000, 10,000
Output	0 - 10 volts

LINSEIS MODEL L2045 FOUR PEN STRIP CHART RECORDER

Pen Speed	up to 120 cm/min
Measuring Response	0-20 volts
Linearity Error	0.25%
Accuracy	0.3%
Zero Suppression	Manual (from 1 to 10X full scale)

LINEAR 3 PEN CONTINUOUS -- MODEL 595 STRIP CHART

Pen Response	20 inches/second
Measuring Response	1 Mv through 5V
Zero Set	Electronically adjustable full scale with 1 full scale of zero suppression
Accuracy	Total limit of error ± 0.5%



CEM System Schematic

Method:	**NO/NO_X by Continuous Analyzer**
Applicable Reference Methods:	EPA 7E, EPA 20; CARB 100, BAAQMD ST-13A, SCAQMD 100.1
Principle:	A sample is continuously withdrawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of NO or NO_X.
Analyzer:	TECO Model 10AR
Measurement Principle:	Chemiluminescence
Accuracy:	1% of full scale
Ranges:	0-2.5, 0-10, 0-25, 0-100, 0-250, 0-1000, 0-2500, 0-10,000 ppm
Output:	0-10 V
Inferences:	Compounds containing nitrogen (other than ammonia) may cause interference.
Response Time:	90%, 1.5 seconds (NO mode) and 1.7 seconds (NO_X mode)
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously. If EPA Method 20 is used, that method's specific procedures for selecting sample points are used.
Analytical Procedure:	The oxides of nitrogen monitoring instrument is a chemiluminescent nitric oxide analyzer. the operational basis of the instrument is the chemiluminescent reaction of NO and ozone (O_3) to form NO_2 in an excited state. Light emission results chemiluminescence is monitored through an optical filter by a high sensitivity photomultiplier tube, the output of which is electronically processed so it is linearly proportional to the NO concentration. The output of the instrument is in ppmV. When NO_2 is expected to be present in the flue gas, a supercooled water dropout flask will be placed in the sample line to avoid loss of NO_2. Since NO_2 is highly soluble in water, "freezing out" the water will allow the NO_2 to reach the analyzers for analysis. The analyzer measures NO only. In the NO_X mode, the gas is passed through a moly converter which converts NO_2 to NO and a total NO_X measurement is obtained. NO_2 is determined as the difference between NO and NO_X. Use of a moly converter instead of a stainless steel converter eliminates NH_3 interference; NH_3 is converted to NO with a stainless converter, but not with a moly converter.

Method:	**Oxygen (O_2) by Continuous Analyzer**
Applicable Reference Methods:	EPA 3A, EPA 20, CARB 100, BAAQMD ST-14, SCAQMD 100.1
Principle:	A sample is continuously withdrawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of O_2 concentration.
Analyzer:	Teledyne Model 326R
Measurement Principle:	Electrochemical cell
Ranges:	0-5, 0-25% 0-100%
Accuracy:	1% of full scale
Output:	0-1 V
Interferences:	Halogens and halogenated compounds will cause a positive interference. Acid gases will consume the fuel cell and cause a slow calibration drift.
Response Time:	90% <60 seconds
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously. If Method 20 is used, that method's specific procedures for selecting sample points are used. Otherwise, stratification checks are performed at the start of a test program to select single or multiple-point sample locations.
Analytical Procedure:	An electrochemical cell is used to measure O_2 concentration. Oxygen in the flue gas diffuses through a Teflon membrane and is reduced on the surface of the cathode. A corresponding oxidation occurs at the anode internally and an electric current is produced that is proportional to the concentration of oxygen. This current is measured and conditioned by the instrument's electronic circuitry to give an output in percent O_2 by volume.

Method:	**Carbon Dioxide (CO_2) by Continuous Analyzer**
Applicable Reference	EPA 3A, CARB 100, BAAQMD ST-5, SCAQMD 100.1
Principle:	A sample is continuously drawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of CO_2 concentration.
Analyzer:	PIR 2000
Measurement Principle:	Non-dispersive infrared (NDIR)
Accuracy:	1% of full scale
Ranges:	0-5, 0-15%
Output:	0-1 V
Interferences:	A possible interference includes water. Since the instrument receives dried sample gas, this interference is not significant.
Response Time:	5 seconds
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously.
Analytical Procedure:	Carbon dioxide concentrations are measured by short path length non-dispersive infrared analyzers. These instruments measure the differential in infrared energy absorbed from energy beams passed through a reference cell (containing a gas selected to have minimal absorption of infrared energy in the wavelength absorbed by the gas component of interest) and a sample cell through which the sample gas flows continuously. The differential absorption appears as a reading on a scale of 0-100%.

Method:	**Carbon Monoxide (CO) by NDIR/Gas Filter Correlation**
Applicable Reference Methods:	EPA 6C; CARB 1-100; BAAQMD ST-6, SCAQMD 100.1
Principle:	A sample is continuously drawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of CO concentration.
Analyzer:	TECO, Model 48H
Measurement Principle:	NDIR/Gas Filter Correlation
Precision:	0.1% ppm
Ranges: ppm	0-50, 0-100, 0-250, 0-500, 0-1000, 0-2500, 0-5000, 0-10000, 0-2500, 0-3,00
Output:	0-1 V
Interferences:	Negligible interference from water and CO_2
Rise/Fall times (0-95%)	1 minute @ 1 lpm flow, 30 second integration time
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously. Sample point selection has been described previously.
Analytical Procedure:	Radiation from an infrared source is chopped and then passed through a gas filter which alternates between CO and N_2 due to rotation of a filter wheel. The radiation then passes through a narrow band-pass filter and a multiple optical pass sample cell where absorption by the sample gas occurs. The IR radiation exits the sample cell and falls on a solid state IR detector.

Method:	**Sulfur Dioxide (SO_2) by Pulsed Flourescent**
Applicable Reference Methods:	EPA 10; CARB 1-100; BAAQMD ST-6, SCAQMD 100.1
Principle:	A sample is continuously drawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of SO_2 concentration.
Analyzer:	TECO, Model 43C-HL
Measurement Principle:	Pulsed flourescense SO_2 analyzer
Precision:	0.1% ppm
Ranges:	5, 10, 20, 50, 100, 200 ppm
Output:	0-10 V
Interferences:	Less than lower detectable limit except for the following: NO <3 ppb, m-xylene <2 ppm, H_2O $<2\%$ of reading.
Response Time:	80 seconds
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously. Sample point selection has been described previously.
Analytical Procedure:	The sample flows into the flourescent chamber, where pulsating UV light excites the SO_2 molecules. The condensing lens focuses the pulsating UV light into the mirror assembly. The mirror assembly contains four selecting mirrors that reflect only the wavelengths which excite SO_2 molecules. As excited SO_2 molecules decay to lower energy states they emit UV light that is proportional to the SO_2 concentration. The PMT (photomultiplier tube) detects UV light emission from decaying SO_2 molecules. The PMT continuously monitors pulsating UV light source and is connected to a circuit that compensates for fluctuating in the light.

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250
environmental consultants
laboratory services

Tandem Gas Chromatographic/Mass Spectroscopic-Electrolytic Conductivity Detector (GC/MS-ELCD) Method for Determination of Total Sulfur in Gas Samples

AtmAA, Inc.
03-060

3/30/93

This method measures selected reduced sulfur species, including but not limited to hydrogen sulfide, carbonyl sulfide, methyl mercaptan, ethyl mercaptan, dimethyl sulfide, carbon disulfide, isopropyl mercaptan, n-propyl mercaptan, and dimethyl disulfide in gaseous sample matrices using gas chromatographic separation and a mass spectrometric and electrolytic conductivity detector (ELCD), where the ELCD measures hydrogen sulfide only. A non-polar methyl silicon capillary gas chromatographic column is used for component separation and selected ion monitoring is used for component quantification. Component quantification is obtained using a multi-component external standard prepared by Scott Specialty Gases. The lower detection limit varies by component but is at least 0.1 ppmv ethyl mercaptan (component of lowest sensitivity) for a 0.31 ml sample volume injection. The upper quantitation limit has not been determined but is at least beyond 80 ppmv dimethyl disulfide, for which response remained linear from 0.1 ppmv to 80 ppmv.

Hydrogen sulfide is measured using an electrolytic conductivity detector operated in the oxidative sulfur mode. A Chromosil 310 column, operated isothermally at 45°C. is used to separate H_2S from other sulfur components. A fixed volume loop injection is used in the analysis for H_2S.

Lower Detection Limits (LDL's):

Using a 1 ml injection volume for H_2S by electrolytic conductivity detector and 0.40 ml injection volume for GC/MS measured sulfur compounds, the following LDL's are obtained:

	(ppmv)
Hydrogen sulfide	0.5
Carbonyl sulfide	0.03
Methyl mercaptan	0.03
Ethyl mercaptan	0.04
Dimethyl sulfide	0.02
Carbon disulfide	0.02
i-propyl mercaptan	0.03
n-propyl mercaptan	0.03
Dimethyl disulfide	0.02

Equipment:

A Hewlett-Packard 5890 series II gas chromatograph (GC), Hewlett-Packard 5971A Mass Selective Detector, 486 MS/DOS computer and HP operating software are used for all sulfur species except H_2S. The GC is fitted with a heated 6-port Valco 1/16" line, sample injection valve. All gas transfer lines to the sample loop are fused silica lined Restek tubing. The fixed volume (0.40 ml) sample loop is Teflon. The transfer line from the valve to the GC column is cleaned and treated blank 0.53 mm OD fused silica line with polyimide coating.

H_2S is measured using a Varian 1400 GC with the Hall oxidative quartz tube furnace and electrolytic cell attached. Nitrogen is used as carrier and oxygen is used as the combustion gas.

Multi-component gaseous standards are prepared by Scott Specialty Gas and are contained in two separate aluminum cylinders and a Scotty IV canister as follows:

Cylinder A (CAL12250)		Cylinder B (CAL3563)	
Carbonyl sulfide	15.2 ppmv	Hydrogen sulfide	12.3 ppmv
Ethyl mercaptan	13.4 ppmv	Methyl mercaptan	22.6 ppmv
Carbon disulfide	16.1 ppmv	Dimethyl sulfide	20.3 ppmv
		Dimethyl disulfide	

Scotty IV (mix 252)

Hydrogen Sulfide 93.8 ppmv

Gas tight clean glass volumetric syringes of 10, 20, & 50 ml capacity, with smooth glass barrel (not sintered glass) are used to make volumetric dilutions of sample or standard.

GC/MS SIM parameters:

	Dwell per ion	start time	Ions
Group 1:	75 msec.	8.0 min.	60
Group 2:	75 msec.	10.0 min.	47,48,64
Group 3:	75 msec.	14.5 min.	47,62,76,78,43,61
Group 4:	75 msec.	19.5 min.	79,94,122,142,156, 128

Components monitored:

Group 1: carbonyl sulfide
Group 2: methyl mercaptan
Group 3: ethyl mercaptan, dimethyl ~~di~~sulfide, carbon disulfide, isopropyl mercaptan, n-propyl mercaptan
Group 4: dimethyl sulfide

Component	Quantitation ion	Confirmation ion
carbonyl sulfide	60	none
methyl mercaptan	47	48
ethyl mercaptan	62	47
dimethyl sulfide	62	47
carbon disulfide	76	78
iso-propyl mercaptan	76	43,47,61
n-propyl mercaptan	76	43,47,61
dimethyl disulfide	94	79

Sulfur dioxide is analyzed by monitoring mass 64 which is included in Group 2 ions.

Calibration:

Gaseous standards can be analyzed prior to or after a set of samples. Response factors are determined from a single point standard calibration. Multi-point calibrations are performed to verify linearity. Consistency of standard response with continuing calibrations is observed to indicate performance of multi-point calibration.

Samples containing components at less than the stated LDL can be analyzed by cryogenically focusing a measured volume of gaseous sample onto a glass bead filled Teflon loop immersed in liquid argon. The sample is thermally transferred upon injection by immersing the sample loop in near boiling temperature water. The LDL obtained by this technique is calculated as:

$$LDL_{cryo} = (\text{cryo volume}/0.40) * LDL_{0.40}$$

Acceptable volumes for cryogenic concentration range from 3 to 100 ml. and are determined based on amounts of other components in the sample such as water, carbon dioxide or hydrocarbons.

Procedure:

A volumetric sample of landfill or source collected gas is transferred from a Tedlar^{R} bag to the 6-port valve injection line using a glass syringe of approximately 10 ml. A Teflon loop of 0.40 ml volume is used to inject the sample. When sample concentrations exceed that of the standard, appropriate volumetric sample dilutions are made using the glass syringes with dry nitrogen diluent. Immediately after sample injection, the GC/MS is started. Standards are analyzed in the same manner as samples. Appropriate component peaks are monitored and integrated after sample analysis data set has been obtained.

Hydrogen sulfide is measured using the electrolytic conductivity detector by a separate direct fixed loop valve injection using heated Teflon loop, transfer lines, and Teflon Chromosil 310 GC column.

A response factor for a standard component is calculated as:

rf = std. amt. / std. area

Sample concentration is calculated using the response factor:

conc. = rf x sample area

At least 10% of samples in a sample set, or minimum of one sample per set are analyzed twice to determine precision. A separate report showing repeat analyses results is included with an analytical report of sulfur component concentrations per each sample set. Repeat analyses must agree within +/- 10% except for component concentrations less than 1 ppmv. A nitrogen blank is analyzed between standards and samples to verify that there is no component carry-over. Samples are analyzed as soon after they are ived as possible, preferably same day and within four hours of ection. Data is being gathered to determine stability of sulfur compounds in Tedlar® bag containers in an effort to extend sample holding time. Samples are usually analyzed before standards to prevent carry-over, since most sulfur components measured in landfill gas samples are lower in concentration than those in the standards.

GC/MS Analysis Conditions:

GC conditions: a 30 M x 0.2 mm, 0.50 um film methyl silicon PONA column from Hewlett-Packard is temperature programmed as follows:

-65 degrees C, hold min.
15 degrees C min. to 220 degrees C, hold 5 min.

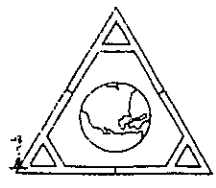
Valve oven Temp. 150 degrees C
GC/MS transfer line 180 degrees C
Carrier gas is helium, pressure regulated at 21 psi.

MS Conditions:

MS calibration is performed periodically prior to performing analyses using PFTBA (perfluoro-tributylamine) as supplied by Hewlett-Packard and as controlled by HP software under the mid-range auto tine program.
Solvent delay = 8 min.

Hall Detector/GC Analysis Conditions:

6' x 1/8" Teflon, Chromosil 310 analytical column
45 degrees C, isothermal
Valve oven & transfer line Temp. 105 degrees C.
Carrier gas is nitrogen, flow rate 18 cc/min.
Oxygen oxidation gas, flow rate 18 cc/min.
Quartz tube oxidation oven Temp. 650 degrees C.



APPENDIX B - Computer Printout of Results

SCAQMD Method 25.1 Analysis

Facility: **Bradley Landfill**
Source: **Flare #2**
Job No.: **W07-039**
Date: **4/20/04**

TOTAL COMBUSTION ANALYSIS RESULTS

Sample ID	Inlet	Inlet	
Run Number	1A	1B	Average
Methane in Tank	278000	281000	279500
TNMHC,Tank (Noncond.)	591	635	
TNMHC - Condensables	1808.0	1798.6	
TNMHC - Total	2399.0	2433.6	
CO Concentration (ppm)	5.29	5.10	5.20
CO2 Concentration (ppm)	259000	265000	262000
O2 Concentration (%)	3.95	3.63	3.79
Sample Parameters			
Tank Number	H	B	
Trap Number	Y	M	
Sample Tank Volume (l)	12.202	12.051	
Initial Pressure (Torr)	5.0	5.0	
Initial Temperature (deg. K)	292	292	
Final Pressure (mm Hg)	470	487	
Final Temperature (deg. K)	292	292	
Sample Volume (l)	7.49	7.67	
Analysis Pressure (mm Hg)	820	820	
Analysis Temperature (deg. K)	292	292	
ICV Volume (l)	2.266	2.266	
ICV Final Pressure (mm Hg)	800	800	
ICV Final Temperature (deg. K)	292	292	
CO2 in ICV (ppm)	5980	6090	
TNMHC,Trap (Condensables)	1808	1799	
Stack Total TNMHC	2399	2434	2416

NOTE: All hydrocarbon values are in terms of ppm, v/v, as methane.

SCAQMD Methods 1-4 Flowrate Determination

Facility: Bradley Landfill
Source: Flare #2
Job No.: W07-039
Date: 4/20/2004

STANDARD TEMPERATURE	Degrees F	60	60	60
RUN NUMBER	******	1	2	Average
CLOCK TIME: INITIAL	******	743	924	
CLOCK TIME: FINAL	******	843	1025	
AVG. STACK TEMPERATURE	Degrees F	105	125	115
AVG. SQUARE DELTA P	Inches H20	0.6118	0.5963	0.6040
BAROMETRIC PRESSURE	Inches HG	29.23	29.23	29.23
SAMPLING TIME	Minutes	60	60	60
SAMPLE VOLUME	Cubic Feet	47.254	44.557	45.906
AVG. METER TEMP.	Degrees F	69.5	82.4	76.0
AVG. DELTA H	Inches H20	1.50	1.50	1.50
DGM CALIB. FACTOR [Y]	******	1.0076	1.0076	1.0076
WATER COLLECTED	Milliliters	52	53	53
CO 2	Percent	26.2	26.2	26.2
O 2	Percent	3.8	3.8	3.8
CO	Percent	0.0	0.0	0.0
CH4	Percent	28.0	28.0	28.0
N 2	Percent	42.1	42.1	42.1
STACK AREA	Square Inches	78.54	78.54	78.54
STATIC PRESSURE	Inches WG	4.20	4.60	4.40
PITOT COEFFICIENT	******	0.99	0.99	0.99
SAMPLE VOLUME DRY	DSCF	45.85	42.21	44.03
WATER AT STD.	SCF	2.5	2.5	2.5
MOISTURE	Percent	5.1	5.6	5.3
MOLE FRACTION DRY GAS	******	0.95	0.94	0.95
MOLECULAR WT.DRY	lb/lb Mole	28.99	28.99	28.99
EXCESS AIR	Percent	52	52	52
MOLECULAR WT. WET	lb/lb Mole	28.43	28.38	28.40
STACK GAS PRESSURE	Inches HG	29.54	29.57	29.55
STACK VELOCITY	AFPM	2549	2529	2539
VOLUMETRIC FLOWRATE, DRY STD	DSCFM	1199	1144	1171
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	1390	1379	1385

EMISSION RATES

SAMPLE A				
TNMHC Concentration, as CH4	ppm	2399		2399
TNMHC Concentration, as CH4	mg/dscf	45.84		45.84
TNMHC Emission Rate, as CH4	lb/hr	7.27		7.10
SAMPLE B				
TNMHC Concentration, as CH4	ppm	2434		2434
TNMHC Concentration, as CH4	mg/dscf	46.50		46.50
TNMHC Emission Rate, as CH4	lb/hr	7.37		7.21
AVERAGE				
TNMHC Concentration, as CH4	ppm	2416		2416
TNMHC Concentration, as CH4	mg/dscf	46.17		46.17
TNMHC Emission Rate, as CH4	lb/hr	7.32		7.15

EXPANSION AND F-FACTOR CALC. METHOD

Client:	Bradley Landfill	Date:	04/20/04
Location:	Sun Valley, CA	Job #:	W07-039
Unit:	Flare #2	Run#:	1

Fuel temperature		deg. F	Std. Temp.	60 deg. F
Fuel Pressure		psi		
Fuel Flow Rate		cfm	Fuel Flow	1199 dscfm
Exhaust Outlet O2	10.44	%		
Barometric Pressure	29.23			

COMPONENTS		MOLE %	HHV btu/ft3	LLV btu/ft3	Exp Factor dscf/scf fuel
Oxygen		3.79			0.038
Nitrogen		42.06			0.421
Carbon Dioxide		26.20			0.262
Methane		27.95	282.30	254.18	2.395
Ethane	C2		0.00	0.00	0.000
Propane	C3		0.00	0.00	0.000
Iso-Butane	C4		0.00	0.00	0.000
N-Butane			0.00	0.00	0.000
Iso-Pentane	C5		0.00	0.00	0.000
N-Pentane			0.00	0.00	0.000
Hexane	C6		0.00	0.00	0.000
Heptane	C7		0.00	0.00	0.000
Octane	C8		0.00	0.00	0.000
Nonane	C9		0.00	0.00	
Total		**100.00**	**282.30**	**254.18**	**3.12**

CALCULATIONS

EXHAUST FLOW RATE, Q = (scfm*Exp Fac)*(20.92(20.92-%O2)

7456 DSCFM

EPA F-Factor = (scf exhaust/scf fuel)/(btu/scf fuel)*(1000000 btu/MMbtu)

11037 dscf/Mmbtu

EXPANSION AND F-FACTOR CALC. METHOD

Client:	Bradley Landfill	Date:	4/20/2004
Location:	Sun Valley, CA	Job #:	W07-039
Unit:	Flare #2	Run#:	2

Fuel temperature		deg. F	Std. Temp.	60 deg. F
Fuel Pressure		psi		
Fuel Flow Rate		cfm	Fuel Flow	1144 dscfm
Exhaust Outlet O2	9.93	%		
Barometric Pressure	29.23			

COMPONENTS		MOLE %	HHV btu/ft3	LLV btu/ft3	Exp Factor dscf/scf fuel
Oxygen		3.79			0.038
Nitrogen		42.06			0.421
Carbon Dioxide		26.20			0.262
Methane		27.95	282.30	254.18	2.395
Ethane	C2		0.00	0.00	0.000
Propane	C3		0.00	0.00	0.000
Iso-Butane	C4		0.00	0.00	0.000
N-Butane			0.00	0.00	0.000
Iso-Pentane	C5		0.00	0.00	0.000
N-Pentane			0.00	0.00	0.000
Hexane	C6		0.00	0.00	0.000
Heptane	C7		0.00	0.00	0.000
Octane	C8		0.00	0.00	0.000
Nonane	C9		0.00	0.00	
Total		**100.00**	**282.30**	**254.18**	**3.12**

CALCULATIONS

EXHAUST FLOW RATE, Q = (scfm*Exp Fac)*(20.92(20.92-%O2)

6787 DSCFM

EPA F-Factor = (scf exhaust/scf fuel)/(btu/scf fuel)*(1000000 btu/MMbtu)

11037 dscf/Mmbtu

SCAQMD Method 307.91

Facility: **Bradley Landfill**
Source: **Flare #2**
Job No.: **W07-039**
Date: **4/20/04**

Sulfur Compounds

Speciated Compound		Concentration ppm, as H2S	No. of S molecules in Compound	Total S ppm, as H2S	SO2 Conc. mg/dscf	Avg. Inlet Flow Rate dscfm	SO2 Rate lb/hr
Hydrogen Sulfide		34.2	1	34.20	2.619	1190	0.412
Carbonyl Sulfide		0.085	1	0.09	0.007	1190	0.001
Methyl mercaptan		0.16	1	0.16	0.012	1190	0.002
Ethyl mercaptan	<	0.09	1	0.09	0.007	1190	0.001
Dimethyl sulfide		0.36	1	0.36	0.028	1190	0.004
Carbon disulfide	<	0.06	2	0.12	0.009	1190	0.001
Dimethyl disulfide	<	0.060	2	0.12	0.009	1190	0.001
iso-propyl mercaptan	<	0.06	1	0.06	0.005	1190	0.001
n-propyl mercaptan	<	0.06	1	0.06	0.005	1190	0.001
Total				35.26			0.425

SCAQMD Method 5.1 Particulate Emissions

Facility: Bradley Landfill
Source: Flare #2
Job No.: W07-039
Date: 4/20/2004

STANDARD TEMPERATURE	Degrees F	60					
RUN NUMBER	******	1	2	1		2	
DATE OF RUN	******	04/20/04	04/23/03	04/20/04		04/23/03	
CLOCK TIME: INITIAL	******	743	924	743		924	
CLOCK TIME: FINAL	******	848	1035	848		1035	
AVG. STACK TEMPERATURE	Degrees F	1592	1607				
AVG. SQUARE DELTA P	Inches H20	0.1000	0.1000				
NOZZLE DIAMETER	Inches	1.090	1.090				
BAROMETRIC PRESSURE	Inches HG	29.23	29.23				
SAMPLING TIME	Minutes	60	60				
SAMPLE VOLUME	Cubic Feet	64.255	63.034				
AVG. METER TEMP.	Degrees F	63.0	73.8				
AVG. DELTA H	Inches H20	3.60	3.60				
DGM CALIB. FACTOR [Y]	******	1.0055	1.0055				
WATER COLLECTED	Milliliters	144	198				
CO 2	Percent	8.88	9.27				
O 2	Percent	10.44	9.93				
CO	Percent						
CH4	Percent						
N 2	Percent	80.68	80.80				
STACK AREA	Square Inches	7238.2	7238.2				
STATIC PRESSURE	Inches WG.	-0.050	-0.050				
PITOT COEFFICIENT	******	0.84	0.84				
SAMPLE VOLUME DRY	DSCF	63.32	60.86				
WATER AT STD.	SCF	6.8	9.3				
MOISTURE	Percent	9.7	13.3				
MOLE FRACTION DRY GAS	******	0.90	0.87				
MOLECULAR WT.DRY	lb/lb Mole	29.84	29.88				
EXCESS AIR	Percent	96	87				
MOLECULAR WT. WET	lb/lb Mole	28.69	28.30				
STACK GAS PRESSURE	Inches HG	29.23	29.23				
STACK VELOCITY	AFPM	674	681				
VOLUMETRIC FLOWRATE, DRY STI	DSCFM	7575	7296	7456	*	6787	*
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	33885	34239				
ISOKINETIC RATIO	Percent	106	106				

CALCULATIONS FOR GRAIN LOADING AND EMISSION RATES

TOTAL PARTICULATE	mg	19.6	14.0	19.6	14.0
PARTICULATE CONCENTRATION	gr/dscf	0.00477	0.00354	0.00477	0.00354
PARTICULATE EMISSION RATE	lb/hr	0.309	0.222	0.305	0.206

*Denotes the use of calculated flowrate based on expansion factor of LFG.

SCAQMD Method 100.1 Emission Rates

Facility: Bradley Landfill
Source: Flare #2
Job No.: W07-039
Date: 4/20/2004

Run Number	******		1		2
Load	******		as Found		as Found
EPA F-Factor	dscf/MMBtu		11037		11037
Stack Flow Rate	dscfm		7456		6787
Oxygen	%		10.44		9.93
Carbon Dioxide	%		8.88		9.27
Oxides of Nitrogen					
Concentration	ppm		10.6		14.5
Concentration @ 3 % O2	ppm		18.1		23.7
Concentration	lb/dscf		1.28E-06		1.76E-06
Emission Rate	lb/MMBtu		2.83E-02		3.70E-02
Emission Rate	lb/hr		0.575		0.716
Carbon Monoxide					
Concentration	ppm	<	20.0	<	20.0
Concentration @ 3 % O2	ppm	<	34.2	<	32.6
Concentration	lb/dscf	<	1.48E-06	<	1.48E-06
Emission Rate	lb/MMBtu	<	3.25E-02	<	3.10E-02
Emission Rate	lb/hr	<	0.660	<	0.601

Client:	Waste Management	Date:	04/20/04
Job No.:	W07-039	Run #:	1
Site:	Bradley Landfill	Fuel:	L.F.G.
Unit:	Flare #2	Std. O2:	3

	O2 %	CO2 %	NOx ppm	CO ppm
Range:	25.00	20.00	25.00	100.00
Span:	11.98	7.00	9.93	50.20
Low:				
High:	20.90	11.98	20.40	80.20
** POST-TEST DRIFT **				
Values				
Zero:	-0.10	-0.05	-0.10	0.00
Span:	12.00	7.00	9.89	50.20
Percent Drift				
Zero:	-0.40	-0.25	-0.40	0.00
Span:	0.08	0.00	-0.16	0.00
** PRE-TEST BIAS **				
Values				
Zero:	0.00	-0.12	0.19	0.00
Span:	11.98	6.90	9.70	49.50
** POST-TEST BIAS **				
Values				
Zero:	-0.15	0.00	-0.15	0.00
Span:	11.95	7.10	9.50	50.30
** BIAS CORRECTION **				
Zero Average	-0.08	-0.06	0.02	0.00
Span Average	11.97	7.00	9.60	49.90
Bias-Corrected Concentration	**10.44**	**8.88**	**10.60**	**4.75**
Bias-Corrected Conc.(O2 adjusted)			**18.14**	**8.12**
** RAW AVERAGE CONCENTRATION **				
Average:	10.42	8.90	10.25	4.72
O2 adjust: 3.0			17.49	8.06

Date	Time	O2	CO2	NOx	CO
20-Apr-04	743	9.56	9.56	13.59	2.43
20-Apr-04	744	9.46	9.62	13.73	3.09
20-Apr-04	745	9.56	9.57	13.42	4.03
20-Apr-04	746	9.50	9.62	13.90	4.88
20-Apr-04	747	9.50	9.61	13.82	5.56
20-Apr-04	748	9.57	9.53	13.80	6.22

20-Apr-04	749	9.55	9.62	13.81	6.74	
20-Apr-04	750	9.57	9.58	13.63	7.24	
20-Apr-04	751	9.53	9.57	13.69	7.64	
20-Apr-04	752	9.54	9.55	13.51	7.78	
20-Apr-04	753	9.59	9.58	13.78	7.96	
20-Apr-04	754	9.59	9.58	14.06	7.48	
20-Apr-04	755	9.62	9.47	13.96	7.46	
20-Apr-04	756	9.58	9.58	14.27	7.25	
20-Apr-04	757	9.78	9.43	13.81	7.22	
20-Apr-04	758	9.63	9.52	14.10	7.17	
20-Apr-04	759	9.60	9.55	13.47	7.04	
20-Apr-04	800	9.91	9.22	9.62	6.59	
20-Apr-04	801	10.20	8.95	9.36	6.91	
20-Apr-04	802	10.41	8.86	9.04	7.34	
20-Apr-04	803	10.24	9.04	9.16	7.12	
20-Apr-04	804	10.31	8.93	9.00	6.92	
20-Apr-04	805	10.49	8.81	8.98	7.38	
20-Apr-04	806	10.47	8.81	9.00	7.12	
20-Apr-04	807	10.53	8.79	8.79	6.66	
20-Apr-04	808	10.48	8.90	8.93	6.29	
20-Apr-04	809	10.44	8.87	8.80	6.06	
20-Apr-04	810	10.44	8.88	8.83	6.08	
20-Apr-04	811	10.47	8.89	8.68	6.01	
20-Apr-04	812	10.44	8.93	8.88	5.94	
20-Apr-04	813	17.59	0.91	0.91	2.74	Port change
20-Apr-04	814	17.26	4.98	4.42	0.62	
20-Apr-04	815	10.55	8.85	9.29	3.94	
20-Apr-04	816	10.47	8.90	9.28	4.31	
20-Apr-04	817	10.37	9.02	9.34	4.38	
20-Apr-04	818	10.30	8.97	9.43	4.27	
20-Apr-04	819	10.36	9.06	9.31	4.12	
20-Apr-04	820	10.41	8.94	9.13	3.97	
20-Apr-04	821	10.38	8.98	9.35	3.86	
20-Apr-04	822	10.38	8.94	9.34	3.71	
20-Apr-04	823	10.50	8.86	9.30	3.58	
20-Apr-04	824	10.42	8.93	9.45	3.45	
20-Apr-04	825	10.45	8.88	9.28	3.27	
20-Apr-04	826	10.42	8.93	9.33	3.10	
20-Apr-04	827	10.46	8.96	9.25	3.01	
20-Apr-04	828	10.36	8.98	9.43	2.95	
20-Apr-04	829	10.35	8.91	9.32	2.95	
20-Apr-04	830	10.57	8.80	9.01	2.86	
20-Apr-04	831	10.68	8.62	8.72	2.80	
20-Apr-04	832	10.55	8.91	9.24	2.65	
20-Apr-04	833	10.42	8.93	9.24	2.68	
20-Apr-04	834	10.43	8.92	9.32	2.73	
20-Apr-04	835	10.50	8.87	9.34	2.80	
20-Apr-04	836	10.49	8.89	9.19	2.74	
20-Apr-04	837	10.43	8.89	9.17	2.69	
20-Apr-04	838	10.50	8.89	9.10	2.54	

20-Apr-04	839	10.43	8.93	9.16	2.37
20-Apr-04	840	10.36	8.98	9.34	2.26
20-Apr-04	841	10.37	8.99	9.22	2.26
20-Apr-04	842	10.50	8.84	9.21	2.26
20-Apr-04	843	10.55	8.74	9.15	2.31

Client:	Waste Management	Date:	04/20/04
Job No.:	W07-039	Run #:	2
Site:	Bradley Landfill	Fuel:	L.F.G.
Unit:	Flare #2	Std. O2:	3

	O2 %	CO2 %	NOx ppm	CO ppm
Range:	25.00	20.00	25.00	100.00
Span:	11.98	7.00	9.93	50.20
Low:				
High:	20.90	11.98	20.40	80.20
	** POST-TEST DRIFT **			
Values				
Zero:	-0.10	-0.05	-0.10	0.00
Span:	12.00	7.00	9.89	50.20
Percent Drift				
Zero:	-0.40	-0.25	-0.40	0.00
Span:	0.08	0.00	-0.16	0.00
	** PRE-TEST BIAS **			
Values				
Zero:	-0.15	0.00	-0.15	0.00
Span:	11.95	7.10	9.50	50.30
	** POST-TEST BIAS **			
Values				
Zero:	0.12	0.00	-0.20	-0.40
Span:	12.00	6.90	9.60	50.00
	** BIAS CORRECTION **			
Zero Average	-0.02	0.00	-0.18	-0.20
Span Average	11.98	7.00	9.55	50.15
Bias-Corrected Concentration	**9.93**	**9.27**	**14.51**	**4.37**
Bias-Corrected Conc.(O2 adjusted)			**23.69**	**7.13**
	** RAW AVERAGE CONCENTRATION **			
Average:	9.93	9.27	14.04	4.18
O2 adjust: 3.0			22.90	6.82

Date	Time	O2	CO2	NOx	CO
20-Apr-04					
20-Apr-04	924	9.24	9.87	19.33	0.06
20-Apr-04	925	9.25	9.85	18.03	0.19
20-Apr-04	926	9.30	9.71	17.50	0.55
20-Apr-04	927	9.47	9.66	18.43	0.81
20-Apr-04	928	9.57	9.61	18.21	1.13
20-Apr-04	929	9.57	9.63	17.77	1.51

20-Apr-04	930	9.32	9.75	17.77	2.03	
20-Apr-04	931	9.42	9.69	18.02	2.60	
20-Apr-04	932	9.55	9.61	17.85	2.93	
20-Apr-04	933	9.54	9.67	17.63	3.19	
20-Apr-04	934	9.41	9.72	17.89	3.57	
20-Apr-04	935	9.45	9.66	18.15	3.90	
20-Apr-04	936	9.45	9.78	18.29	4.35	
20-Apr-04	937	9.34	9.75	18.04	4.69	
20-Apr-04	938	9.54	9.57	17.10	4.83	
20-Apr-04	939	9.61	9.55	16.80	4.88	
20-Apr-04	940	9.85	9.31	15.73	4.96	
20-Apr-04	941	9.84	9.39	15.88	4.95	
20-Apr-04	942	9.67	9.50	16.06	4.88	
20-Apr-04	943	9.83	9.33	15.63	4.71	
20-Apr-04	944	9.78	9.46	16.00	4.59	
20-Apr-04	945	9.58	9.59	16.91	4.67	
20-Apr-04	946	9.56	9.67	17.01	4.71	
20-Apr-04	947	9.51	9.56	17.13	4.77	
20-Apr-04	948	9.42	9.79	18.00	4.66	
20-Apr-04	949	9.34	9.79	17.55	4.56	
20-Apr-04	950	9.50	9.61	16.33	4.63	
20-Apr-04	951	9.55	9.57	16.15	4.60	
20-Apr-04	952	9.79	9.36	16.01	4.46	
20-Apr-04	953	9.88	9.37	15.73	4.29	
20-Apr-04	954	9.34	9.46	15.63	4.59	
20-Apr-04	955	17.37	1.01	1.58	1.87	Port change
20-Apr-04	956	15.02	7.03	11.11	1.14	
20-Apr-04	957	9.29	9.85	16.39	3.59	
20-Apr-04	958	9.27	9.86	16.30	3.82	
20-Apr-04	959	9.12	9.93	16.79	4.21	
20-Apr-04	1000	9.17	9.92	16.63	4.64	
20-Apr-04	1001	9.10	9.99	16.70	5.08	
20-Apr-04	1002	9.19	9.83	16.09	5.36	
20-Apr-04	1003	9.38	9.56	10.17	5.20	
20-Apr-04	1004	10.17	9.05	8.93	5.78	
20-Apr-04	1005	10.34	8.84	8.36	6.41	
20-Apr-04	1006	10.41	8.81	8.43	6.83	
20-Apr-04	1007	10.66	8.57	7.89	6.75	
20-Apr-04	1008	10.61	8.73	8.08	6.35	
20-Apr-04	1009	10.44	8.79	8.13	5.80	
20-Apr-04	1010	10.41	8.77	8.13	5.43	
20-Apr-04	1011	10.50	8.79	8.22	5.42	
20-Apr-04	1012	10.43	8.89	8.33	5.24	
20-Apr-04	1013	10.30	8.93	8.45	5.05	
20-Apr-04	1014	10.34	8.85	8.36	5.00	
20-Apr-04	1015	10.37	8.90	8.40	4.94	
20-Apr-04	1016	10.44	8.81	8.26	4.78	
20-Apr-04	1017	10.34	8.92	8.50	4.79	
20-Apr-04	1018	10.42	8.76	8.29	4.76	
20-Apr-04	1019	10.48	8.89	10.60	4.74	

20-Apr-04	1020	10.17	9.17	13.01	5.02
20-Apr-04	1021	9.46	9.78	14.39	4.57
20-Apr-04	1022	9.02	10.02	14.76	4.05
20-Apr-04	1023	9.23	9.90	14.43	3.80
20-Apr-04	1024	9.20	9.90	14.08	3.86
20-Apr-04	1025	9.40	9.57	10.07	3.67

Facility: Waste Management
Source: Flare #2
Job No.: W07-039
Test Date: 4/20/04

PRETEST CALIBRATION ERROR				
LEAK CHECK				
RANGE :	25 O2	20 CO2	100 CO	25 NOx
ZERO				
Instrument	0.00	0.00	0.00	0.00
Cylinder	0.00	0.00	0.00	0.00
Difference (%)	0.00	0.00	0.00	0.00
LOW LEVEL				
Instrument				
Cylinder				
Difference (%)	0.00	0.00	0.00	0.00
MID LEVEL				
Instrument	12.13	7.00	49.80	9.88
Cylinder	11.98	7.00	50.20	9.93
Difference (%)	0.58	0.00	-0.40	-0.20
HIGH LEVEL				
Instrument	21.13	11.90	80.00	20.13
Cylinder	20.90	11.98	80.20	20.40
Difference (%)	0.90	-0.40	-0.20	-1.10

PRETEST LINEARITY	Cylinder	Instrument
	O2	
Zero	0.00	0.00
High Level	20.90	21.13
Slope	0.99	
Intercept	0.00	Status
Predicted Value	12.11	<1
Linearity (%)	0.05	PASS
	CO2	
Zero	0.00	0.00
High Level	11.98	11.90
Slope	1.01	
Intercept	0.00	Status
Predicted Value	6.95	<1
Linearity (%)	0.23	PASS
	CO2	
Zero	0.00	0.00
High Level	80.20	80.00
Slope	1.00	
Intercept	0.00	Status
Predicted Value	50.07	<1
Linearity (%)	0.27	PASS
	NOX	
Zero	0.00	0.00
High Level	20.40	20.13
Slope	1.01	
Intercept	0.00	Status
Predicted Value	9.80	<1
Linearity (%)	0.34	PASS

POST TEST CALIBRATION ERROR				
LEAK CHECK				
	O2	CO2	CO	NOx
ZERO				
Instrument	-0.25	0.00	0.00	0.00
Cylinder	0.00	0.00	0.00	0.00
Difference (%)	-1.00	0.00	0.00	0.00
LOW LEVEL				
Instrument				
Cylinder				
Difference (%)	0.00	0.00	0.00	0.00
MID LEVEL				
Instrument	12.00	7.00	50.00	9.98
Cylinder	11.98	7.00	50.20	9.93
Difference (%)	0.08	0.00	-0.20	0.20
HIGH LEVEL				
Instrument	21.25	12.00	80.50	21.00
Cylinder	20.90	11.98	80.20	20.40
Difference (%)	1.40	0.10	0.30	2.40

POST TEST LINEARITY	Cylinder	Instrument
	O2	
Zero	0.00	-0.25
High Level	20.90	21.25
Slope	0.97	
Intercept	0.24	Status
Predicted Value	12.07	<1
Linearity (%)	0.30	PASS
	CO2	
Zero	0.00	0.00
High Level	11.98	12.00
Slope	1.00	
Intercept	0.00	Status
Predicted Value	7.01	<1
Linearity (%)	0.05	PASS
	CO2	
Zero	0.00	0.00
High Level	80.20	80.50
Slope	1.00	
Intercept	0.00	Status
Predicted Value	50.39	<1
Linearity (%)	0.39	PASS
	NOX	
Zero	0.00	0.00
High Level	20.40	21.00
Slope	0.97	
Intercept	0.00	Status
Predicted Value	10.22	<1
Linearity (%)	0.97	PASS

Facility: Waste Management
Source: Flare #2
Job No.: W07-039
Test Date: 4/20/04

SYSTEM RESPONSE TIME			
	#1	#2	#3
Upscale			
NOx	22		
CO	55		
O2	31		
CO2	20		
Downscale			
NOx	23		
CO	50		
O2	28		
CO2	20		

NO2 CONVERTER EFFICIENCY			
	ppm	%	status
Cylinder(Co)	18.90		
NO Mode(C1)	0.25		
NOx Mode(C2)	17.50		
D1	18.65		
D2	17.25		
D3	1.40		
CE		92.49	
CE > 90 %			PASS

Table 5-2
Trace Organic Species
Destruction Efficiency Results
Waste Management - Bradley Landfill
Flare #2
April 20, 2004

	INLET				OUTLET			
	Flow rate	1171	dscfm		Flow rate	7121.17	dscfm	
Species	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	Dest. Eff. (%)	
Hydrogen Sulfide	34400	1.40E+00	2.17E-01	< 500	< 2.04E-02	< 1.92E-02	> 91.16	
Benzene	906	8.42E-02	1.30E-02	< 0.2	< 1.86E-05	< 1.76E-05	> 99.87	
Benzychloride	< 50	< 7.59E-03	< 1.18E-03	< 0.8	< 1.21E-04	< 1.14E-04	NA	
Chlorobenzene	253	3.50E-02	5.42E-03	< 0.2	< 2.70E-05	< 2.54E-05	> 99.53	
Dichlorobenzenes	944	1.66E-01	2.57E-02	< 1.1	< 1.93E-04	< 1.82E-04	> 99.29	
1,1-dichloroethane	77.3	9.15E-03	1.42E-03	< 0.2	< 2.37E-05	< 2.23E-05	> 98.43	
1,2-dichloroethane	< 20	2.37E-03	3.67E-04	< 0.2	< 2.37E-05	< 2.23E-05	NA	
1,1-dichloroethylene	< 30	3.48E-03	5.39E-04	< 0.2	< 2.32E-05	< 2.18E-05	NA	
Dichloromethane	< 30	3.05E-03	4.72E-04	0.9	9.14E-05	< 8.61E-05	NA	
1,2-Dibromoethane	< 30	< 6.74E-03	< 1.04E-03	< 0.2	< 4.49E-05	< 4.23E-05	NA	
Perchloroethene	848	1.84E-01	2.84E-02	< 0.1	< 2.83E-05	< 2.67E-05	> 99.91	
Carbon tetrachloride	< 30	< 5.52E-03	< 8.56E-04	< 0.1	< 1.84E-05	< 1.73E-05	NA	
Toluene	3950	4.34E-01	6.73E-02	0.91	< 1.00E-04	< 9.43E-05	99.86	
1,1,1-trichloroethane	< 20	3.18E-03	4.93E-04	< 0.1	< 1.59E-05	< 1.50E-05	NA	
Trichloroethene	947	1.48E-01	2.30E-02	< 0.1	< 1.57E-05	< 1.47E-05	> 99.94	
Chloroform	< 20	< 2.84E-03	< 4.41E-04	< 0.1	< 1.42E-05	< 1.34E-05	NA	
Vinyl Chloride	947	7.07E-02	1.10E-02	< 0.2	< 1.49E-05	< 1.41E-05	> 99.87	
m+p-xylenes	11500	1.46E+00	2.26E-01	0.42	< 5.32E-05	< 5.01E-05	99.98	
o-xylene	2070	2.62E-01	4.06E-02	< 0.2	< 2.53E-05	< 2.39E-05	> 99.94	
TNMHC	2416337	4.62E+01	7.16E+00	4500	8.60E-02	8.11E-02	98.87	

Note: All values preceded by "<" are below the detection limit. The reported values are the detection limit.
NA–Not Applicable: Destruction efficiency can not be calculated since both inlet and outlet values are below the detection limit.

APPENDIX C - Laboratory Results

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250
environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

CO, CH_4, CO_2, and TGNMO Analysis in Tanks
and Traps by SCAQMD Method 25 (FID/TCA)

Report Date: April 30, 2004
Client: Horizon Air Measurement
P.O. No.: Verbal
Client Project No.: W07-039
Project Location: Waste Management / Bradley Landfill / Sun Valley CA.
Source ID: Flare inlet

Date Received: April 21, & 29, 2004
Date Analyzed: April 22, & 30, 2004

AtmAA Lab No.	Sample ID			tank CO	tank CH_4	tank CO_2	tank Ethane	tank TGNMO	trap CO2 in ICV	tank Oxygen (%v)	P_1	P_2
	Tank	Trap	ICV	*(Concentrations in ppmv)*								
01124-14	H	Y	27	5.29	278000	259000	2.50	591	5980	3.95	470	8
01124-15	B	M	3	5.10	281000	265000	3.48	635	6090	3.63	487	820
trap burn system blank			H						7.0			

TGNMO is total gaseous non-methane (excluding ethane) organics reported as ppm methane.
Ethane is reported as ppmv methane.
nr - not requested
P_1 - Initial Pressure, mm Hg
P_2 - Final Pressure, mm Hg

Michael L. Porter
Laboratory Director

C40

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Client Project No.: W07-039
Date Received: April 21, & 29, 2004
Date Analyzed: April 22, & 30, 2004

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
CO	TK H	5.07	5.52	5.29	4.3
CH_4	TK H	278000	278000	278000	0.0
CO_2	TK H	260000	258000	259000	0.39
Ethane	TK H	2.50	2.50	2.50	0.0
TGNMO	TK H	593	589	591	0.34
CO_2 in ICV (in trap, transfer tanks)	ICV 27	5980	5990	5980	0.09
		(Concentration in %v)			
Oxygen	TK H	3.92	3.99	3.95	0.82

A set of 2 TCA samples, laboratory numbers 01124-(14 & 15), was analyzed for CO, CH_4, CO_2, O 2, and total gaseous non-methane organics (TGNMO). Agreement between repeat analyses is a measure of precision and is shown above in the column "% Difference from Mean". Repeat analyses are an important part of AtmAA's quality assurance program. The average % Difference from Mean for 7 repeat measurements from the sample set of 2 TCA samples is 0.84%.

Gas standards (containing CO, CH_4, CO_2 and propane) used for TCA analyses, were prepared and certified by Praxair.

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250
environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

Organic Carbon Analysis in Water Impinger and Methane & TGNMO Analysis in SUMMA Canister Samples from Impinger/Canister Train Sample Collection

Report Date: April 30, 2004
Client: Horizon Air Measurement
P.O. No.: Verbal
Client Project No.: W07-039
Source Location : Waste Management / Bradley Landfill / Sun Valley CA.
Source ID: Flare outlet

Date Received: April 21, 2004
Date Analyzed: April 22, & 26, 2004

Methane and total gaseous non-methane organics were measured by flame ionization detection/total combustion analysis (FID/TCA). Organic carbon in water vial samples were measured by Dohrman total organic carbon analyzer, water FID/TCA.

AtmAA Lab No.	Sample ID	Canister Methane	Canister Ethane	Canister TGNMO	Impinger Organic Carbon as Methane	Impinger Volume	P_1	P2
				(concentration, ppmv)		(ml)		
01124-16	Summa S22	<1	<1	4.35	---	---	515	820
	Impinger H13	---	---	---	1.45	3.14	--	--
01124-17	Summa S13	<1	<1	2.52	---	---	562	820
	Impinger H12	---	---	---	0.68	1.90	--	--

TGNMO is total gaseous non-methane organics (excluding ethane), measured and reported as ppm methane. Ethane is reported as ppmv methane.
** Note - Impinger sample results are not field blank corrected. The field blank (impinger U18), from another job, contained 1.69 ug carbon as methane, corresponding to 0.57 ppm methane for a 4.53 liter sample.*
P_1 and P_2 are initial and final pressures measured in mm Hg.

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY

(Repeat Analysis)

Source Location : Waste Management / Bradley Landfill / Sun Valley CA.
Date Received: April 21, 2004
Date Analyzed: April 22, & 26, 2004

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
Methane	Summa S22	<1	<1	---	---
	Summa S13	<1	<1	---	---
Ethane	Summa S22	<1	<1	---	---
	Summa S13	<1	<1	---	---
TGNMO	Summa S22	4.34	4.35	4.35	0.1
	Summa S22	2.58	2.45	2.52	2.6
Impinger TOC	Impinger H13	1.43	1.46	1.45	1.0
	Impinger H12	0.68	0.68	0.68	0.0

A set of 2 SUMMA canister/impinger samples, laboratory number 01124-(16 & 17), was analyzed for methane and total gaseous non-methane organics (TGNMO) & TOC. Agreement between repeat analysis is a measure of precision and is shown in the column "% Difference from Mean". Repeat analyses are an important part of AtmAA's quality assurance program. The average % Difference from Mean for 4 repeat measurements from the sample set of 2 SUMMA canister/impinger samples is 0.93%.

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250
environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

SCAQMD Rule 1150.1 Components Analysis in Inlet Gas Tedlar Bag Sample

Report Date: April 27, 2004
Client: Horizon
Project Location: Waste / Bradley Landfill
Client Project No.: W07-039
Date Received: April 21, 2004
Date Analyzed: April 21, 2004

AtmAA Lab No.:	01124-18
Sample I.D.:	W07039-F#2
	TB-IN-1
Components	*(Concentration in ppmv)*
Hydrogen sulfide	34.4
	(Concentration in ppbv)
Benzene	903
Benzylchloride	<50
Chlorobenzene	259
Dichlorobenzenes*	944
1,1-dichloroethane	77.3
1,2-dichloroethane	<20
1,1-dichloroethylene	<30
Dichloromethane	<30
1,2-dibromoethane	<30
Perchloroethene	648
Carbon tetrachloride	<30
Toluene	3950
1,1,1-trichloroethane	<20
Trichloroethene	142
Chloroform	<20
Vinyl chloride	947
m+p-xylenes	11500
o-xylene	2070

** total amount containing meta, para, and ortho isomers*

Michael L. Porter
Laboratory Director

044

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250
environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

Hydrogen Sulfide and Reduced Sulfur Compounds
Analysis in Inlet Tedlar Bag Sample

Report Date: April 27, 2004
Client: Horizon
Project Location: Waste / Bradley Landfill
Client Project No.: W07-039
Date Received: April 21, 2004
Date Analyzed: April 21, 2004

ANALYSIS DESCRIPTION

Hydrogen sulfide was analyzed by gas chromatography with a Hall electrolytic conductivity detector operated in the oxidative sulfur mode. All other components were measured by GC/ Mass Spec.

	AtmAA Lab No.:	01124-18	(repeat
	Sample I.D.:	W07039-F#2 TB-IN-1	W07039-F#2 TB-IN-1
Components		*(Concentration in ppmv)*	
Hydrogen sulfide		34.2	34.6
Carbonyl sulfide		0.085	
Methyl mercaptan		0.16	
Ethyl mercaptan		<0.09	
Dimethyl sulfide		0.36	
Carbon disulfide		<0.06	
isopropyl mercaptan		<0.06	
n-propyl mercaptan		<0.06	
Dimethyl disulfide		<0.06	
TRS		35.0	

TRS - total reduced sulfur

Michael L. Porter
Laboratory Director

045

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250
environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

SCAQMD Rule 1150.1 Components Analysis in Outlet Tedlar Bag Sample

Report Date: April 27, 2004
Client: Horizon
Project Location: Waste / Bradley Landfill
Client Project No.: W07-039
Date Received: April 21, 2004
Date Analyzed: April 21, 2004

AtmAA Lab No.:	01124-19
Sample I.D.:	W07039-F#2
	TB-EXH-1
Components	*(Concentration in ppbv)*
Hydrogen sulfide	<500
Benzene	<0.2
Benzylchloride	<0.8
Chlorobenzene	<0.2
Dichlorobenzenes*	<1.1
1,1-dichloroethane	<0.2
1,2-dichloroethane	<0.2
1,1-dichloroethylene	<0.2
Dichloromethane	0.90
1,2-dibromoethane	<0.2
Perchloroethene	<0.1
Carbon tetrachloride	<0.1
Toluene	0.91
1,1,1-trichloroethane	<0.1
Trichloroethene	<0.1
Chloroform	<0.1
Vinyl chloride	<0.2
m+p-xylenes	0.42
o-xylene	<0.2

** total amount containing meta, para, and ortho isomers*

Michael L. Porter
Laboratory Director

046

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Waste Management	Sun Valley, CA
Project No.	**Field Logbook No.**
WO7-039	
Sampler: (Signature)	**Chain of Custody Tape No.**

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	SCAQMD 25.1	OV	SCAQMD 25.3	Method 307.91	Rule 1150.1 LVS	TSP	Hold as S/D	REMARKS
TANK 1	04/20/04		01124-14		X	X				4		
B			15		X	X				M		
SUMMA CAN			16				X			H13		
SB			17				X			H12		
WO7039-FB2-TB-Eth-1			18					X	X			
WO7039-FB2-TB-Eth-2											X	
WO7039-FB2-TB-Eth-1			19						X			
WO7039-FB2-TB-Eth-2											X	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
				04.21.04	0900
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	04.21.04	0935		4/21/04	9:35
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

Atm AA
Calabasas, CA

No 8508

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Waste Management / Bradley	Sun Valley, CA
Project No. W07.039	**Field Logbook No.**
Sampler: (Signature)	**Chain of Custody Tape No.**

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES: COC	ANALYSES: Trap	ANALYSES: Tank	REMARKS
ICV# H	11-24-04			SCAQMD 25.1	✓	—	—	System Blank
I					✓	B	O	FLARE 3
30					✓	Z	N	
12					✓	U	C	FLARE 1
6					✓	Y1	I	
27					✓	Y	H	FLARE 2
3					✓	M	B	

	Date	Time		Date	Time
Relinquished by: (Signature)			Received by: (Signature)	11-29-04	4:00
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received for Laboratory: (Signature)		
Sample Disposal Method:			Disposed of by: (Signature)		

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ATM.A.A.
Calabasas, CA

Nº 7486

Facility: WASTE MANAGEMENT
Source: FLARE 2
Job No.: W07-039
Test Date: 04/20-21/04

SCAQMD Method 5.1

DATA SHEET FOR PARTICULATE MATTER SCAQMD METHOD 5.1

DATE SAMPLED: 04/20-21/04
DATE EXTRACTED: 05/03/04

RUN #1

	SAMPLE ID	BEAKER/ FILTER ID	VOLUME	INITIAL	FINAL	NET WEIGHT(g)
A - FILTER CATCH	W07039-F#2-EXH-M5-PF1	Q00126	NA	0.1502	0.1510	0.0008
FILTER ACID						0.0000
FILTER SULFATE						
B - PROBE CATCH						0.0000
PROBE ACID						0.0000
PROBE SULFATE						
						0.0000
C - IMP.CATCH(INSOL)	W07039-F#2-EXH-M5-EF1	Q00132	745	0.1540	0.1556	0.0016
INSOLUBLE ACID						0.0000
INSOLUBLE SULFATE						0.0000
D - IMP. CATCH (SOL)	W07039-F#2-EXH-M5-R1	040103	745	29.5597	29.5745	0.0148
SOLUBLE ACID						0.0000
SOLUBLE SULFATE						0.0000
E - ORGANIC EXTRACT	W07039-F#2-EXH-M5-MC1	040113	125	29.5224	29.5248	0.0024

TOTAL PARTICULATE	(A+B+C+D+E)	0.0196
SOLID PARTICULATE	(A+B+C+D)	0.0172

DATA SHEET FOR PARTICULATE MATTER SCAQMD METHOD 5.1

DATE SAMPLED: 04/20-21/04
DATE EXTRACTED: 05/03/04

RUN #2

	SAMPLE ID	BEAKER/ FILTER ID	VOLUME	INITIAL	FINAL	NET WEIGHT(g)
A - FILTER CATCH	W07039-F#2-EXH-M5-PF2	Q00092	NA	0.1565	0.1573	0.0008
FILTER ACID						0.0000
FILTER SULFATE						
						0.0000
B - PROBE CATCH						0.0000
PROBE ACID						
PROBE SULFATE						0.0000
C - IMP.CATCH(INSOL)	W07039-F#2-EXH-M5-EF2	Q00136	830	0.1538	0.1555	0.0017
INSOLUBLE ACID						0.0000
INSOLUBLE SULFATE						0.0000
D - IMP. CATCH (SOL)	W07039-F#2-EXH-M5-R2	040098	830	29.5225	29.5327	0.0102
SOLUBLE ACID						0.0000
SOLUBLE SULFATE						0.0000
E - ORGANIC EXTRACT	W07039-F#2-EXH-M5-MC2	040099	125	29.2437	29.2450	0.0013
TOTAL PARTICULATE	(A+B+C+D+E)					0.0140
SOLID PARTICULATE	(A+B+C+D)					0.0127

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Waste Management	Sun Valley, CA
Project No.	**Field Logbook No.**
W07-039	
Sampler: (Signature)	**Chain of Custody Tape No.**

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	SVOCs Meth 8	ANALYSES	REMARKS
W07039-FH2-EXH-MS-PE-1					X		
W07039-FH2-EXH-MS-RE-1					X		
W07039-FH2-EXH-MS-PE-2					X		
W07039-FH2-EXH-MS-RE-2					X		

	Date	Time		Date	Time
Relinquished by: (Signature)	04/20/04	1600	Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received for Laboratory: (Signature)	04.20.04	1800
Sample Disposal Method:			Disposed of by: (Signature)		

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

№ 8507

APPENDIX D - Field Data Sheets

VELOCITY DATA SHEET - METHOD 2

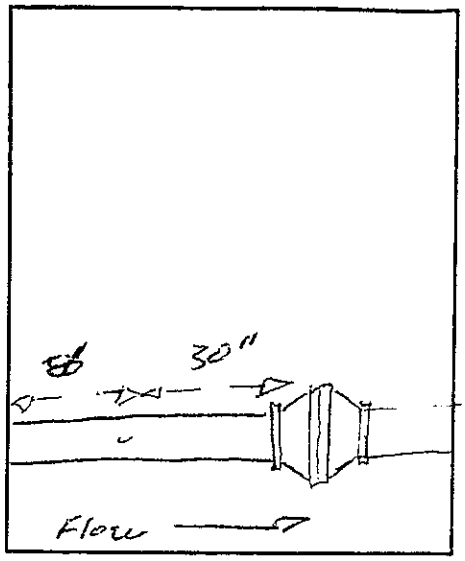
	Bradley LF	Baro. Press:	°C 29.23 29.23	D_1 upstream:	3
...ce:	Kiwc Stn	Static Press:	+4.21"	D_1 downstream:	8
Job #:	W07-039	Pitot Tube #:	24" STD	Stack Diameter:	10
Date:	04/19/04 04/20/04	Pitot Tube Type:	STD	Leak Check	
Operator:	EC	Magnahelic:	R97C065M62	Initial: ✓/✓	Final: ✓/✓

Run #: 1

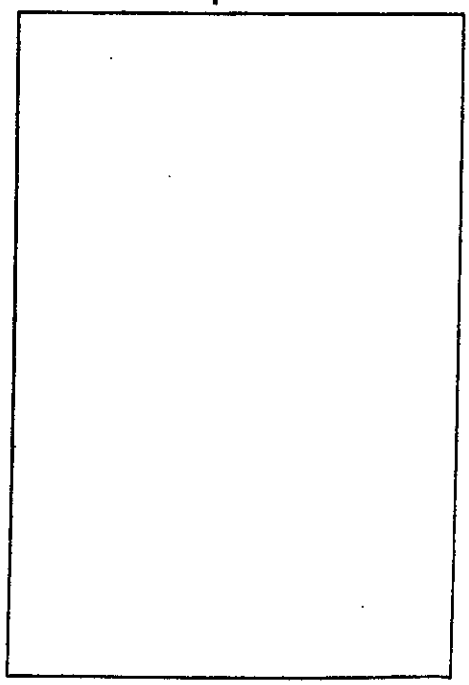
Flare #2

Point #	Position in.	Velocity Head in. H_2O	Stack Temp °F	Cyclonic Flow Angle
A-8		0.36	106	N/A
7		0.40	106	
6		0.38	105	
5		0.40	105	
4		0.38	105	
3		0.40	105	
2		0.30	105	
1		0.38	106	
Average		$\sqrt{\Delta P}$=0.618	T_s= 105.0	∠=

Side View



Top View



VELOCITY DATA SHEET - METHOD 2

Facility:	Bradley LF	**Baro. Press:**	29.23	**D_1 upstream:**	3
Source:	Flare #	**Static Press:**	4.6	**D_1 downstream:**	8
Job #:	007-039	**Pitot Tube #:**	24" 4D	**Stack Diameter:**	10
Date:	04/04/04	**Pitot Tube Type:**	STD	**Leak Check**	
Operator:	RC	**Magnahelic:**	2970866 SW62	**Initial:** ✓	**Final:** ✓

Run #: 2

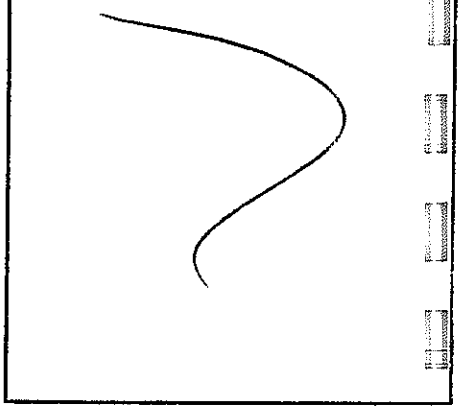
Flare #2

Point #	Position in.	Velocity Head in. H_2O	Stack Temp °F	Cyclonic Flow Angle
A-8		0.41	125	
7		0.30	126	
6		0.28	125	
5		0.35	125	
4		0.35	126	
3		0.36	125	
2		0.35	125	
1		0.46	126	
Average		$\sqrt{\Delta P}$=0.5963	T_s= 126.0	∠=

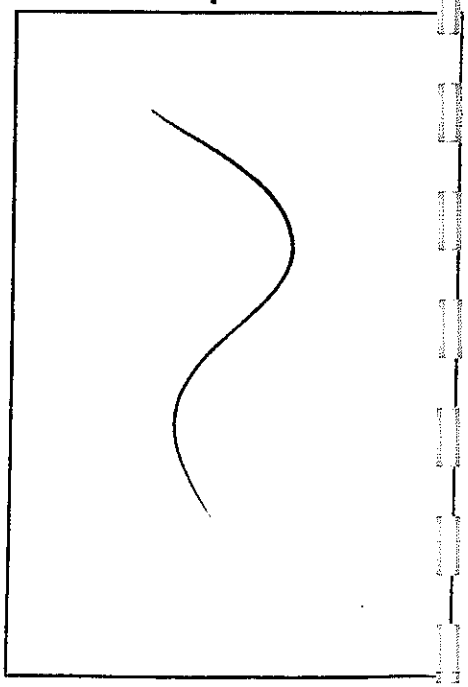
RC RC

Side View

SEE RUN 1



Top View



PARTICULATE FIELD DATA

PLANT Bradley ~~4th~~
DATE ~~04/19/04~~ 04/20/04
LOCATION Sun Valley, CA
OPERATOR RC, CSM, FW
SOURCE Flare # 2 - Inlet
RUN NO. 1 - SCAQMD Meth 4.1
SAMPLE BOX NO. C-9

TIME START 0743

METER BOX NO. 7
METER ΔH @ 1.544
Y= 1.0046
PROBE I.D. NO. N/A
NOZZLE DIAMETER, in. N/A
STACK DIAMETER, in. 10
PROBE HEATER SETTING N/A
HEATER BOX SETTING N/A
Δ Cp FACTOR ~~0.84~~ N/A
FILTER NO. N/A

ASSUMED MOISTURE, % ~~10~~ N/A
AMBIENT TEMPERATURE ~70°
BARO. PRESS. 29.23
STATIC PRESS. NA
NOMAGRAPH INDEX NA

PRE TEST LEAK CHECKS
METER <0.001 @ 21 in. Hg
PITOTS NA @ in. Hg
ORSAT NA

P#	TIME	T_S °F	ΔP in H_2O	√ΔP	ΔH in H_2O	Vm ft^3 (512.605)	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
6	00	N/A	N/A	N/A	1.5	~~510.920~~	55	55	N/A	60	<1
	10				1.5	520.1	68	56		58	<1
	20				1.5	527.6	68	60		57	<1
	30				1.5	535.2	71	66		56	<1
	40				1.5	542.7	79	71		55	<1
	50				1.6	550.3	86	74		54	<1
	60				~~1.5~~	559.859					
	(63)										
Avg.					1.50	47.254		69.6			

TIME END 0843

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	130	112	4		267
Initial	100	100	0		261
Liquid Collected	30	12	4		6
Total Vol. Collected					52.0

POST TEST LEAK CHECKS
Meter <0.001 @ 6 in. Hg
Pitots NA @ in. Hg
Orsat NA

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average

HORIZON AIR MEASUREMENT SERVICES, INC.

055

PARTICULATE FIELD DATA

PLANT Bradley LF
DATE 04/19/09
LOCATION San Ysidro, CA
OPERATOR RL, BSM, TW
SOURCE Flare #2 - Inlet
RUN NO. 2
SAMPLE BOX NO. C-9
TIME START 0824

METER BOX NO. 7
METER ΔH @ 1.5144
Y= 1.0076
PROBE I.D. NO. N/A
NOZZLE DIAMETER, in. N/A
STACK DIAMETER, in. 10
PROBE HEATER SETTING N/A
HEATER BOX SETTING N/A
Δ Cp FACTOR N/A
FILTER NO.

ASSUMED MOISTURE, % N/A
AMBIENT TEMPERATURE 70°F
BARO. PRESS. 29.23
STATIC PRESS. NA
NOMAGRAPH INDEX NA

PRE TEST LEAK CHECKS
METER 0.001 @ 5 in. Hg
PITOTS @ in. Hg
ORSAT

Flare Train shutoff briefly @ TW request

P#	TIME	T_s °F	ΔP in H_2O	√ΔP	ΔH in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC (in Hg)
S	00	N/A	N/A	N/A	1.5	560.375	76	76	N/A	69	<1
	10				1.5	567.8	80	76		58	<1
	20				1.5	575.2	85	78		57	<1
	30				1.5	582.6	88	79		56	<1
	40				1.5	590.0	89	80		56	<1
	50				1.5	597.5	89	80		58	<1
	60					604.930					
Avg.					1.50	44.557		82.4			

TIME END = 0924

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	128	108	4		260
Initial	100	100	0		267
Liquid Collected					
Total Vol. Collected					53.0

POST TEST LEAK CHECKS
Meter 0.001 @ 5 in. Hg
Pitots @ in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				0.56

PARTICULATE FIELD DATA

PLANT Bradley LF
DATE 09/19/01 04/26/01
LOCATION Sun Valley, CA
OPERATOR NL, CAM, FW, + CA
SOURCE Flare # 2 - Exhaust
RUN NO. 1
SAMPLE BOX NO. A-6
TIME START 0743

METER BOX NO. 4
METER ΔH @ 1.740
Y= 1.005
PROBE I.D. NO. 10-2 Inconel
NOZZLE DIAMETER, in. .40 - 2 - .37
STACK DIAMETER, in. 76"
PROBE HEATER SETTING N/A
HEATER BOX SETTING N/A
Δ Cp FACTOR 0.84
FILTER NO. [illegible] Q20126 (47mm)

ASSUMED MOISTURE, % 10
AMBIENT TEMPERATURE [illegible]
BARO. PRESS. [illegible]
STATIC PRESS. -0.05
NOMAGRAPH INDEX 360

PRE TEST LEAK CHECKS
METER Cap @ 15 in. Hg
PITOTS ✓ @ 3 in. Hg
ORSAT NA

P#	TIME	T_s °F	ΔP in H_2O	√ΔP	ΔH in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
D-17	00	1598	0.01	NA	3.6	744370	44	49	NA	48	7
11	2.5	1615	0.01		3.6	746.9	51	50		50	7
10	5.0	1614	0.01		3.6	749.5	54	51		51	7
9	7.5	1619	0.01		3.6	752.0	56	51		54	7
8	10.0	1614	0.01		3.6	754.6	57	52		53	7
7	12.5	1610	0.01		3.6	757.1	58	53		56	7
6	15.0	1609	0.01		3.6	759.7	59	54		57	7
5	17.5	1601	0.01		3.6	762.3	61	56		58	7
4	20.0	1608	0.01		3.6	764.6	64	56		58	7
3	22.5	1599	0.01		3.6	768.2	65	58		57	7
2	25.0	1610	0.01		3.6	770.9	66	59		56	7
1	27.5	1606	0.01		3.6	773.7	67	61		60	7
D-12	30.0	1612	0.01		3.6	776.8	68	62		59	7
11	32.5	1580	0.01		3.6	781.4	70	62		59	7
10	35.0	1578	0.01		3.6	784.1	70	63		59	7
9	37.5	1601	0.01		3.6	786.3	71	63		56	7
8	40.0	1570	0.01		3.6	788.7	71	63		56	7
7	42.5	1577	0.01		3.6	789.4	73	64		57	7
6	45.0	1592	0.01		3.6	792.1	73	65		56	7
5	47.5	1570	0.01		3.6	794.8	74	66		55	7
4	50.0	1553	0.01		3.6	797.3	74	66		56	7
3	52.5	1557	0.01		3.6	800.0	74	67		53	7
2	55.0	1562	0.01		3.6	802.7	76	68		54	7
1	57.5	1572	0.01			805.3	76	68		55	7
	60.0	—	—		—	808.2	—	—		—	—
Avg.		1592.2		0.1000	3.60	64.256		63.0			

TIME END = 0818

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	196	118	14		276
Initial	100	100	0		260
Liquid Collected	96	18	14		16
Total Vol. Collected					144.0

POST TEST LEAK CHECKS
Meter <0.001 ✓ @ 15 in. Hg
Pitots ✓ ✓ @ >3 in. Hg
Orsat NA

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
	1.08	1.1	1.09	1.09

PARTICULATE FIELD DATA

PLANT Bradley LF
DATE 04/20/04
LOCATION Sun Valley, CA
OPERATOR ME
SOURCE Flare #2
RUN NO. 2-Shrouds 8-1
SAMPLE BOX NO. 2-2
TIME START 0923 0924

METER BOX NO. #5 4
METER ΔH @ 1.7001
Y= 1.0065
PROBE I.D. NO. 10-2
NOZZLE DIAMETER, in. 1.09"
STACK DIAMETER, in. 96"
PROBE HEATER SETTING N/A
HEATER BOX SETTING N/A
Δ Cp FACTOR 0.84
FILTER NO. Q00092

ASSUMED MOISTURE, % 10
AMBIENT TEMPERATURE ~70 F
BARO. PRESS. 29.05
STATIC PRESS. -0.02
NOMAGRAPH INDEX 360

PRE TEST LEAK CHECKS
METER 0.001 @ 4 in. Hg
PITOTS V @ >3 in. Hg
ORSAT

P#	TIME	T_s °F	ΔP in H_2O	√ΔP	ΔH in H_2O	Vm ft³	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VA (in Hg)
A-12	00	1586	0.01	36	3.6	809.04	67	68	N/A	62	7
11	2.5	1597	0.01		3.6	811.7	69	68		60	7
10	5.0	1601	0.01		3.6	814.3	71	68		47	7
9	7.5	1613	0.01		3.6	816.9	72	68		52	7
8	10.0	1610	0.01		3.6	819.6	73	69		54	7
7	12.5	1613	0.01		3.6	822.3	74	70		55	7
6	15.0	1620	0.01		3.6	825.0	75	70		57	7
5	17.5	1607	0.01		3.6	827.7	76	70		57	7
4	20.0	1604	0.01		3.6	830.3	76	71		56	7
3	22.5	1605	0.01		3.6	833.0	76	71		58	7
2	25.0	1616	0.01		3.6	835.7	77	71		56	7
1	27.5	1606	0.01		3.6	838.3	77	72		56	7
B-12	30.0	1621	0.01		3.6	840.08	72	71		57	7
11	32.5	1608	0.01		3.6	842.8	74	71		56	7
10	35.0	1611	0.01		3.6	845.6	76	72		55	7
9	37.5	1613	0.01		3.6	848.5	74	72		56	7
8	40.0	1622	0.01		3.6	851.6	78	73		57	7
7	42.5	1600	0.01		3.6	854.3	79	75		56	7
6	45.0	1617	0.01		3.6	856.9	79	73		57	7
5	47.5	1626	0.01		3.6	859.6	80	74		56	7
4	50.0	1655	0.01		3.6	862.3	80	74		58	7
3	52.5	1621	0.01		3.6	864.9	80	74		57	7
2	55.0	1629	0.01		3.6	867.6	80	74		58	7
1	57.5	1620	0.01		3.6	870.6	80	76		59	7
	60.0					873.028					
Avg.		1606.7		0.1000	3.60	63.034		73.8			

TIME END = 1058 nc nc nc nc

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	240	128	16		278
Initial	100	100	0		264
Liquid Collected	140	28	16		14
Total Vol. Collected					198.0

nc

POST TEST LEAK CHECKS
Meter 0.001 @ 8 in. Hg
Pitots V @ >3 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3				0.0	53

Nozzle Cal	D_1	D_2	D_3	Average
	1.08	1.1	1.09	1.09

TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET

Job #: 4007-039
Facility: Bradley LF
Location: Sun Valley, CA
Date: 04/26/04
Operator: RE

Control Device: LFG Flare #2
Sample Location: Inlet
Ambient Temp.: ~76°F
Baro. Pressure: 29.23

SAMPLE A

Tank #: 4 **Trap #:** Y
Initial Vacuum: 6.0
Final Vacuum:
Start Time:

SAMPLE B

Tank #: B **Trap #:** M
Initial Vacuum: 5.0
Final Vacuum:
End Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	29	100
05	27.5	100
10	26	100
15	24.5	100
20	23	100
25	21.5	100
30	19	100
35	16.5	100
40	15	100
45	14	100
50	13	100
55	12	100
60	11	

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	29	100
05	27.5	100
10	26	100
15	24.5	100
20	23	100
25	21.5	100
30	19	100
35	17.5	100
40	16	100
45	14.5	100
50	13	100
55	12	100
60	11	

LEAK RATE

Pre Test : √/√
Post Test:

TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25 ~~25~~ 25.3
FIELD SAMPLING DATA SHEET

Job #: W07-039
Facility: Bradley LFGE
Location: San Valley, CA
Date: ~~04/19/04~~ 04/20/04 TW
Operator: VE, CHM, TW

Control Device: LFG Flare #2
Sample Location: Exhaust
Ambient Temp.: NR°F
Baro. Pressure: 29.23

SAMPLE A

Tank #: 522 **Trap #:** #13
Initial Vacuum: 30", 2.6
Final Vacuum: 6"
Start Time: 0925

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	Set
05	28	
10	26	
15	24	
20	22	
25	20	
30	18	
35	16	
40	14	
45	12	
50	10	
55	8	
60	6	

SAMPLE B

Tank #: 513 **Trap #:** #12
Initial Vacuum: 30", 2.6
Final Vacuum: 6"
End Time: 09

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	Set
05	28	
10	26	
15	24	
20	22	
25	20	
30	18	
35	16	
40	14	
45	12½	
50	10	
55	8	
60	6	

LEAK RATE

Pre Test : ✓✓ RC
Post Test: ✓✓ TW

INTEGRATED BAG SAMPLING DATA FORM

Run Number: 1

Date: 04/14/04 Plant: Bradley LFGE

Sampling Location: Exhaust Flare #2

Barometric Pressure: 29.25

Ambient Temp. °C: ~~80~~ °F 77 °F Stack Temp. °C:

Operator: RE, CSM, TW

Time	Traverse Point	Rate Meter Flow Rate (Q), $cm^3/min.$	% Dev.[a]
00	A-1		0%
10			
20			
30	B-1		
40			
50			
60			
		Avg. =	

a

$$\%\ Dev. = \left(\frac{Q - Q_{avg}}{Q_{avg}}\right) 100;\ must\ be \leq 10\%$$

CEM TEMPERATURE DATA

Facility: Bradley LFGE Date: 04/20/07

Job No.: 1007-039 Run #: 1

Source: LFG Flare # Exhaust

Probe Temp Settings: N/A - STACK >1400 °F

Heated Line Temp Settings: 250 °F

		TEMPERATURES °F		
	Time	Condenser Outlet	Probe	Teflon Line
1	Run 1 00	36	>250°F	>250°F
2	10	36	↓	
3	20	36		
4	30	37		
5	40	37		
6	50	37		
7	60	37		
8	Run 2 00	34		
9	10	35		
10	20	35		
11	30	35		
12	40	35		
13	50	36		
14	60	36		
15				

APPENDIX E - Calibration Information

Control Box Calibration Data

Date: 01/13/04

Calibrated by: Craig Moran

Meter Box Number: 4

Barometric Pressure: 29.31

Wet Test Meter Cf: 0.9966

Orifice setting (H)	Gas Volumes: Wet Test (cu.ft)	Gas Volumes: Dry Gas Initial (cu.ft)	Gas Volumes: Dry Gas Final (cu.ft)	Temperatures: DGM Initial (°F)	Temperatures: DGM final (°F)	Temperatures: WTM (°F)	Time (min)	Y	H@
0.5	17.254	208.505	225.491	66	69	65	38	1.0154	1.3806
1.0	9.372	227.595	236.812	68	71	65	15	1.0190	1.4527
1.5	11.075	106.870	117.820	60	64	64	15	0.9999	1.5768
2.0	16.797	118.122	135.009	62	65	64	20	0.9845	1.6210
3.0	15.505	135.577	151.060	63	70	64	15	0.9948	1.5953
4.0	23.787	151.551	175.371	66	72	64	20	0.9943	1.5990
						AVERAGE		1.0013	1.5376

Reviewed by: 01.12.04

Control Box Calibration Data

Date: 04/01/04

Calibrated by: Ferodie Jesus Orara Torres

Meter Box Number: 7

Barometric Pressure: 29.15

Wet Test Meter Cf: 0.9971

Orifice setting (H)	Gas Volumes			Temperatures			Time	Y	H@
	Wet Test (cu.ft)	Dry Gas Initial (cu.ft)	Dry Gas Final (cu.ft)	DGM Initial (°F)	DGM final (°F)	WTM (°F)	(min)		
0.5	10.860	481.057	491.805	77	79	72	24	1.0171	1.4058
1.0	10.554	470.230	480.784	79	81	72	17	1.0091	1.4881
1.5	23.823	446.051	469.930	79	82	71	32	1.0083	1.5450
2.0	30.126	415.545	445.746	79	83	71	35	1.0078	1.5396
3.0	16.789	398.167	415.011	79	84	71	16	1.0054	1.5526
4.0	13.344	384.495	397.891	76	83	71	11	0.9981	1.5553
						AVERAGE		1.0076	1.5144

Reviewed by:

Magnehelic Gauge Calibration Data

Range: 0.0-1.00"

Date: 01/26/04

Calibrated by: Ferodie Jesus Orara Torres

BAROMETRIC PRESURE: 29.20

Reference: 0.0-10.0" MANOMETER

SYSTEM
LEAK CHECKS (Y/N): Y

POINT
LEAK CHECK (Y/N): Y

Magnahelic Box # 1

Serial # R970865M62

MAG	MAN R1	MAN R2	MAN R3	MEAN	MEAN/MAG
0.20	0.20	0.20	0.20	0.201	1.005
0.40	0.40	0.40	0.40	0.400	1.000
0.60	0.60	0.60	0.60	0.600	1.000
0.80	0.80	0.80	0.80	0.798	0.997
1.00	1.00	1.00	1.00	1.000	1.000

Correction Factor: 1.0004

Date: 1/27/04

Checked by:

STACK TEMPERATURE SENSOR CALIBRATION DATA- APEX PROBE ASSEMBLIES

Date: 01/05-07/04
Calibrated by: Ferodie Jesus Orara Torres and Craig Moran

THERMOCOUPLE ID:

	ICE WATER						ABSOLUTE T DIFF., %			BOILING WATER						ABSOLUTE T DIFF., %			BOILING OIL						ABSOLUTE T DIFF., %		
	REF			TC						REF			TC						REF			TC					
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Stainless Steel Probes																											
3-1	34	34	34	36	37	37	-0.4	-0.6	-0.6	212	212	212	212	212	212	0.0	0.0	0.0	448	448	448	446	447	447	0.2	0.1	0.1
4-2	34	34	34	34	35	35	0.0	-0.2	-0.2	212	212	212	214	214	214	-0.3	-0.3	-0.3	430	430	430	429	430	431	0.1	0.0	-0.1
4-3	34	34	34	34	35	35	0.0	-0.2	-0.2	212	212	212	213	214	214	-0.1	-0.3	-0.3	450	450	450	456	452	457	-0.7	-0.2	-0.8
6-2	33	33	33	34	33	33	-0.2	0.0	0.0	205	205	205	206	206	206	-0.2	-0.2	0.0	465	465	465	463	462	463	0.2	0.3	0.2
6-3	34	34	34	36	36	35	-0.4	-0.4	-0.2	212	212	212	212	212	213	0.0	0.0	-0.1	432	432	432	439	438	438	-0.8	-0.7	-0.7
6-4	33	33	33	34	35	34	-0.2	-0.4	-0.2	212	212	212	216	216	216	0.2	-0.6	-0.6	440	440	440	432	433	435	0.9	0.8	0.6
A6-5	34	34	34	34	34	34	0.0	0.0	0.0	212	212	212	215	214	214	-0.4	-0.3	-0.3	540	540	540	535	537	538	0.5	0.3	0.2
A8-1	34	34	34	34	34	34	0.0	0.0	0.0	212	212	212	214	215	214	-0.3	-0.4	-0.3	542	542	542	538	539	539	0.4	0.3	0.3
A8-2	34	34	34	34	34	34	0.0	0.0	0.0	212	212	212	215	215	215	-0.4	-0.4	-0.4	542	542	542	545	545	545	-0.3	-0.3	-0.3
10-1	34	34	34	35	35	35	-0.2	-0.2	-0.2	212	212	212	211	211	210	0.1	0.1	0.3	540	540	540	540	539	539	0.0	0.1	0.1
16-1	32	32	32	33	32	32	-0.2	0.0	0.0	212	212	212	212	212	212	0.0	0.0	0.0	529	529	529	529	529	530	0.0	0.0	-0.1
M17-1	33	33	33	34	33	33	-0.2	0.0	0.0	212	212	212	214	213	213	-0.3	-0.1	-0.1	450	450	450	448	446	447	0.2	0.4	0.3
M17-2	35	35	35	38	38	38	-0.6	-0.6	-0.6	212	212	212	214	213	213	-0.3	-0.1	-0.1	450	450	450	458	446	447	-0.9	0.4	0.3
M17-3	34	34	34	35	34	34	-0.2	0.0	0.0	200	200	200	198	199	200	0.3	0.2	0.0	460	460	460	458	461	460	0.2	-0.1	0.0
Inconel																											
10-2 Inc	34	34	34	34	34	34	0.0	0.0	0.0	212	212	212	211	211	210	0.1	0.1	0.3	540	540	540	540	539	539	0.0	0.1	0.1
6-1 Inc	32	32	32	33	33	32	-0.2	-0.2	0.0	212	212	212	213	213	213	-0.1	-0.1	-0.1	541	541	540	541	541	540	0.0	0.0	0.0
Loose Thermocouple																											
6-8	33	33	33	34	33	33	-0.2	0.0	0.0	212	212	212	211	212	212	0.1	0.0	0.0	450	450	450	452	453	452	-0.2	-0.3	-0.2
6-7	33	33	33	34	33	33	-0.2	0.0	0.0	200	200	200	198	199	198	0.3	0.2	0.3	465	465	465	461	465	463	0.4	0.0	0.2
7-2	34	34	34	34	34	33	0.0	0.0	0.2	212	212	212	211	211	211	0.1	0.1	0.1	450	450	450	451	451	451	-0.1	-0.1	-0.1
8-3	33	33	33	34	33	33	-0.2	0.0	0.0	212	212	212	211	212	212	0.1	0.0	0.0	450	450	450	451	451	450	-0.1	-0.1	0.0

Note: If absolute temperature values of the reference thermometer being calibrated and the stack temperature sensors agree within 1.5 percent at each of the three calibration points, no correction is needed.

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles. CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS

CUSTOMER HORIZON AIR MEASUREMENTS

DATE 03/11/04

P.O NUMBER

REF. NUMBER 15453700

REQUESTED COMPOSITION

GAS	CONCENTRATION
CARBON DIOXIDE	7 %
OXYGEN	12 %
NITROGEN	BALANCE
ANALYTICAL ACCURACY	±0.02%abs

ANALYTICAL METHOD

INSTRUMENT	ANALYTICAL PRINCIPLE
METTLER ID5, S/N:1865166	Gravimetric

Values not valid below 150 psig.

THIS CYLINDER NO.	SA 10110
CYLINDER PRESSURE	2000 **PSIG**
EXPIRATION DATE	03/11/07
CLASSIFICATION	PRIMARY STANDARD
BATCH NUMBER	N/A
LOT NUMBER	109331207
PART NUMBER	EV NICDOXP1-AS
CYLINDER SIZE	AS **CGA** 590 148 **CFT**

CERTIFIED CONCENTRATION

CARBON DIOXIDE	7.00 %
OXYGEN	11.98 %
NITROGEN	BALANCE
ANALYTICAL ACCURACY	±0.02%abs

ANALYZED BY JACK FU

CERTIFIED BY TY TRIPLETT

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (325) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS

CUSTOMER HORIZON AIR MEASUREMENTS

DATE 09/15/03

P.O NUMBER

REF. NUMBER 55946400

REQUESTED COMPOSITION

GAS	CONCENTRATION
CARBON DIOXIDE	12. %
NITROGEN	BALANCE
ANALYTICAL ACCURACY	±1 %

ANALYTICAL METHOD

INSTRUMENT	ANALYTICAL PRINCIPLE
METTLER ID5, S/N:1865166	GRAVIMETRIC

Values not valid below 150 psig.

THIS CYLINDER NO.	SA 17158
CYLINDER PRESSURE	2000 **PSIG**
EXPIRATION DATE	12/31/06
CLASSIFICATION	PRIMARY STANDARD
BATCH NUMBER	N/A
LOT NUMBER	109232903
PART NUMBER	EV NICD12P-AS
CYLINDER SIZE	AS **CGA** 580 145 **CFT**

CERTIFIED CONCENTRATION

CARBON DIOXIDE	11.98 %
NITROGEN	BALANCE
ANALYTICAL ACCURACY	±1 %

ANALYZED BY JACK FU

CERTIFIED BY VICTOR DOTAN

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (523) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENTS **P.O NUMBER**

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE GMIS	vs.SRM#1683	CC 95448	22.4 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** NITRIC OXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Thermo Env. 42H S/N 42H-44979-273

ANALYTICAL PRINCIPLE Chemiluminescence **LAST CALIBRATION DATE** 09/01/02

FIRST ANALYSIS DATE 08/28/02 **SECOND ANALYSIS DATE** 09/20/02

Z 0	R 22.3	C 20.1	CONC. 20.2	Z 0	R 25.8	C 23.4	CONC. 20.3
R 22.3	Z 0	C 20.2	CONC. 20.3	R 25.6	Z 0	C 23.1	CONC. 20.2
Z 0	C 20.2	R 22.4	CONC. 20.2	Z 0	C 23.4	R 25.8	CONC. 20.3
U/M ppm		MEAN TEST ASSAY	20.2 ppm	U/M ppm		MEAN TEST ASSAY	20.3 ppm

NOx values for reference only.
All values not valid below 150 psig.

THIS CYLINDER NO. CC 150203
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. Rev. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 09/20/02
EXPIRATION DATE 09/20/04 **TERM** 24 MONTHS

CERTIFIED CONCENTRATION

NITRIC OXIDE	20.2 ppm
NITROGEN	BALANCE
NOx	20.4 ppm

ANALYZED BY MICHAEL TSANG ***CERTIFIED BY*** PHU TIEN NGUYEN

670

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles. CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENTS **P.O NUMBER** 8197

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE	vs.SRM2628a	CC 137315	9.50 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** NITRIC OXIDE **ANALYZER MAKE-MODEL-S/N** Thermo Env. 42H S/N 42H-44979-273

ANALYTICAL PRINCIPLE CHEMILUMINESCENCE **LAST CALIBRATION DATE** 06/02/03

FIRST ANALYSIS DATE 05/05/03 **SECOND ANALYSIS DATE** 06/06/03

Z 0	R 10.74	C 11.19	CONC. 9.90	Z 0.01	R 9.34	C 9.73	CONC. 9.90
R 10.70	Z 0	C 11.20	CONC. 9.94	R 9.37	Z 0.01	C 9.80	CONC. 9.94
Z 0	C 11.21	R 10.72	CONC. 9.93	Z 0.01	C 9.83	R 9.37	CONC. 9.97
U/M ppm		MEAN TEST ASSAY 9.92		U/M ppm			MEAN TEST ASSAY 9.94

NOx = 9.93 ppm (For reference only).
All values not valid below 150 psig.

THIS CYLINDER NO. CC 167634
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. Rev. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 2 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 06/06/03
EXPIRATION DATE 06/06/05 **TERM** 24 MONTHS

CERTIFIED CONCENTRATION

NITRIC OXIDE	9.93 ppm
NITROGEN	BALANCE

ANALYZED BY JOSEPH CHARLES

CERTIFIED BY MICHAEL TSANG

011

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS

CUSTOMER HORIZON AIR MEASUREMENT

DATE 01/14/04

P.O NUMBER 8305

REF. NUMBER 58531700

REQUESTED COMPOSITION

GAS	CONCENTRATION
NITROGEN DIOXIDE (AS NOX)	19 ppm
NITROGEN	BALANCE

ANALYTICAL ACCURACY ± 1 %

NO

ANALYTICAL METHOD

INSTRUMENT	ANALYTICAL PRINCIPLE
Thermo Env. 42H S/N 42H-44979-273	Chemiluminescence

VALUES NOT VALID BELOW 150 PSIG.

SRM UNCERTAINTY ± 1 %

NO VALUE IS FOR REFERENCE ONLY.

THIS CYLINDER NO.	CC 118326
CYLINDER PRESSURE	2000 **PSIG**
EXPIRATION DATE	07/14/04
CLASSIFICATION	PRIMARY STANDARD
BATCH NUMBER	N/A
LOT NUMBER	109316003
PART NUMBER	EV NINX19MP-AS
CYLINDER SIZE	AS **CGA** 660 140 **CFT**

CERTIFIED CONCENTRATION

NITROGEN DIOXIDE (AS NOX)	18.9 ppm
NITROGEN	BALANCE

ANALYTICAL ACCURACY ± 1 %

NO 0.5 ppm

ANALYZED BY JOSEPH CHARLES

CERTIFIED BY MICHAEL TSANG

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (525) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENTS **P.O NUMBER** 8078

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
CARBON MONOXIDE GMIS	vs.SRM#1679	CC 81440	99.1 ppm
NITRIC OXIDE GMIS	vsSRM#1684b	CC 115392	100.0 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** CARBON MONOXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Ultramat 5E S/N A12-729

ANALYTICAL PRINCIPLE NDIR **LAST CALIBRATION DATE** 11/14/02

FIRST ANALYSIS DATE 12/02/02 **SECOND ANALYSIS DATE** 12/10/02

Z 0.0	R 99.1	C 80.2	CONC. 80.2	Z 0.0	R 99.1	C 80.3	CONC. 80.3
R 99.1	Z 0.0	C 80.2	CONC. 80.2	R 99.1	Z 0.0	C 80.2	CONC. 80.2
Z 0.0	C 80.2	R 99.1	CONC. 80.2	Z 0.0	C 80.2	R 99.1	CONC. 80.2

U/M ppm **MEAN TEST ASSAY** 80.2 ppm **U/M** ppm **MEAN TEST ASSAY** 80.2 ppm

2. **COMPONENT** NITRIC OXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Beckman 951A S/N 0101354

ANALYTICAL PRINCIPLE Chemiluminescence **LAST CALIBRATION DATE** 12/08/02

FIRST ANALYSIS DATE 12/02/02 **SECOND ANALYSIS DATE** 12/10/02

Z 0.0	R 873.4	C 707.2	CONC. 81.0	Z 0.0	R 872.0	C 708.5	CONC. 81.2
R 874.6	Z 0.0	C 711.2	CONC. 81.3	R 872.3	Z 0.0	C 709.0	CONC. 81.3
Z 0.0	C 712.4	R 875.6	CONC. 81.4	Z 0.0	C 712.0	R 876.4	CONC. 81.2

U/M mV **MEAN TEST ASSAY** 81.2 ppm **U/M** mV **MEAN TEST ASSAY** 81.2 ppm

Values not valid below 150 psig.
NOx values for reference use only.

THIS CYLINDER NO. CC 92871
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. Rev. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 12/10/02
EXPIRATION DATE 12/10/04 **TERM** 24 MONTHS

CERTIFIED CONCENTRATION

CARBON MONOXIDE	80.2 ppm
NITRIC OXIDE	81.2 ppm
NITROGEN	BALANCE
NOx	81.8 ppm

ANALYZED BY Chris Vu CHRIS VU **CERTIFIED BY** Helena Tran HELENA TRAN

CM3

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR **P.O NUMBER** 8354

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
CARBON MONOXIDE GMIS	VS.SRM#1678	CC 81679	51.1 PPM
NITRIC OXIDE GMIS	vsSRM#1683b	CC 137710	48.0 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** CARBON MONOXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Ultramat 5E S/N A12-729

ANALYTICAL PRINCIPLE NDIR **LAST CALIBRATION DATE** 03/01/04

FIRST ANALYSIS DATE 03/19/04 **SECOND ANALYSIS DATE** 03/26/04

Z 0.0	R 50.2	C 50.2	CONC. 50.2		Z 0.0	R 51.1	C 50.2	CONC. 50.2			
R 50.2	Z 0.0	C 50.2	CONC. 50.2		R 51.1	Z 0.0	C 50.2	CONC. 50.2			
Z 0.0	C 50.2	R 50.2	CONC. 50.2		Z 0.0	C 50.2	R 51.1	CONC. 50.2			
U/M ppm		MEAN TEST ASSAY 50.2 ppm			U/M ppm			MEAN TEST ASSAY 50.2 ppm			

2. **COMPONENT** NITRIC OXIDE GMIS **ANALYZER MAKE-MODEL-S/N** BECKMAN 951A S/N#0101354

ANALYTICAL PRINCIPLE CHEMILUMINESCENCE **LAST CALIBRATION DATE** 03/01/04

FIRST ANALYSIS DATE 03/19/04 **SECOND ANALYSIS DATE** 03/26/04

Z 0.0	R 458.5	C 477.0	CONC. 49.9		Z 0.0	R 457.5	C 477.0	CONC. 50.0			
R 458.7	Z 0.0	C 477.3	CONC. 49.9		R 457.4	Z 0.0	C 477.6	CONC. 50.1			
Z 0.0	C 477.5	R 459.4	CONC. 49.9		Z 0.0	C 476.8	R 457.5	CONC. 50.0			
U/M mV		MEAN TEST ASSAY 49.9 ppm			U/M mV			MEAN TEST ASSAY 50.0 ppm			

NOx VALUE FOR REFERENCE USE ONLY. ALL VALUES NOT VALID BELOW 150 psig.
FIRST CO ASSAY DONE AGAINST G.M.I.S.# CC 81679 (50.2 ppm CO/N2).

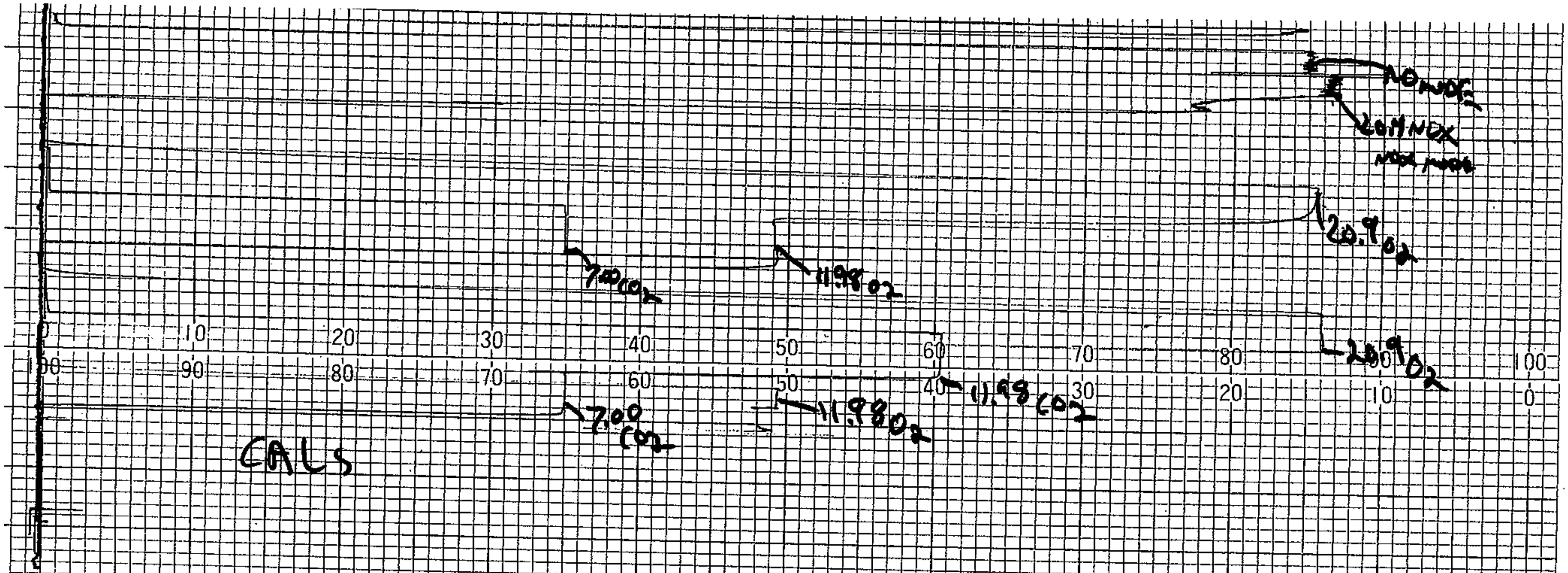
THIS CYLINDER NO. CC 100039
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. Rev. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 03/26/04
EXPIRATION DATE 03/26/06 **TERM** 24 MONTHS

CERTIFIED CONCENTRATION

CARBON MONOXIDE	50.2 ppm
NITRIC OXIDE	50.0 ppm
NITROGEN	BALANCE
NOx	50.4 ppm

ANALYZED BY CHRIS VU ***CERTIFIED BY*** HELENA TRAN

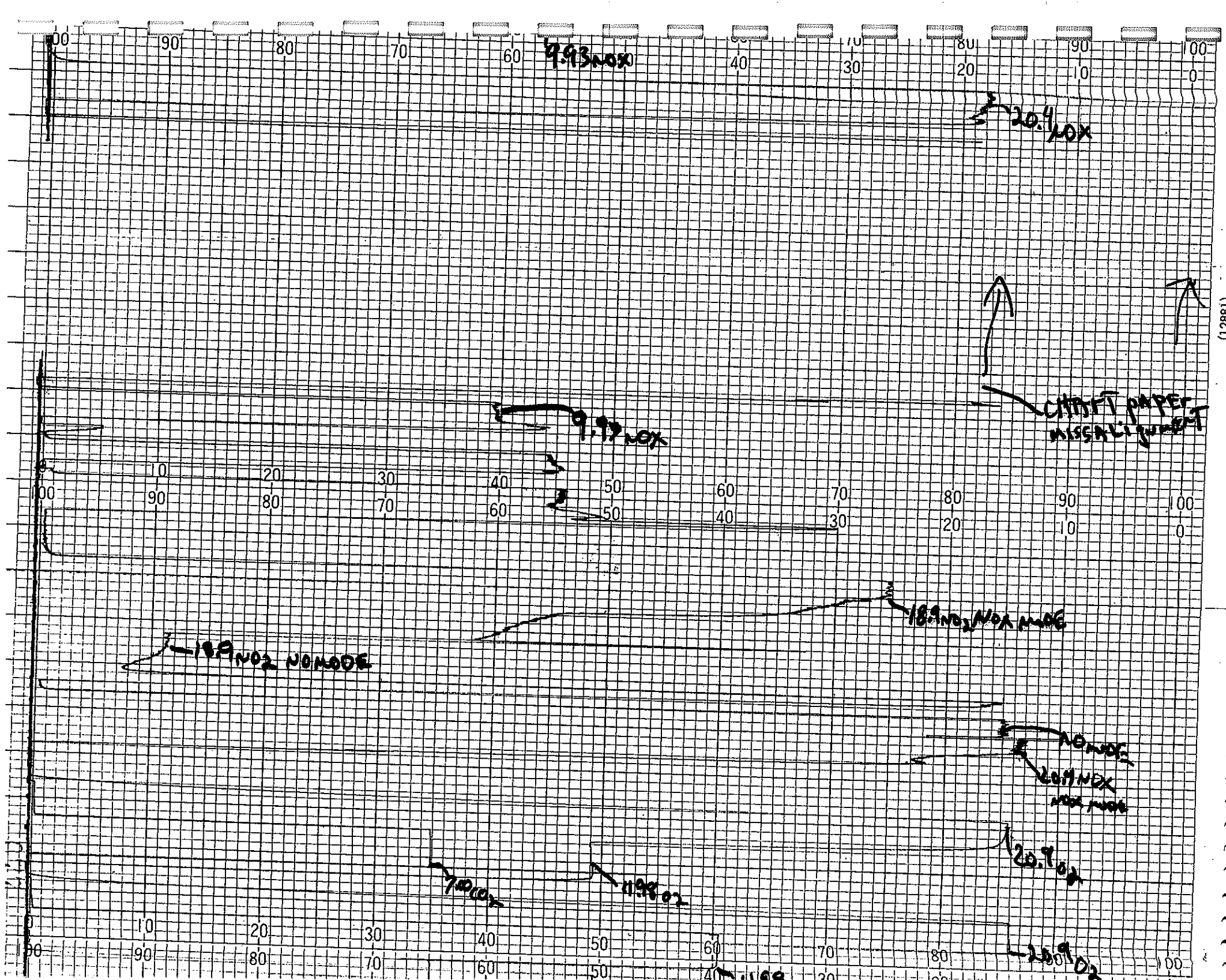
APPENDIX F - Strip Chart Data

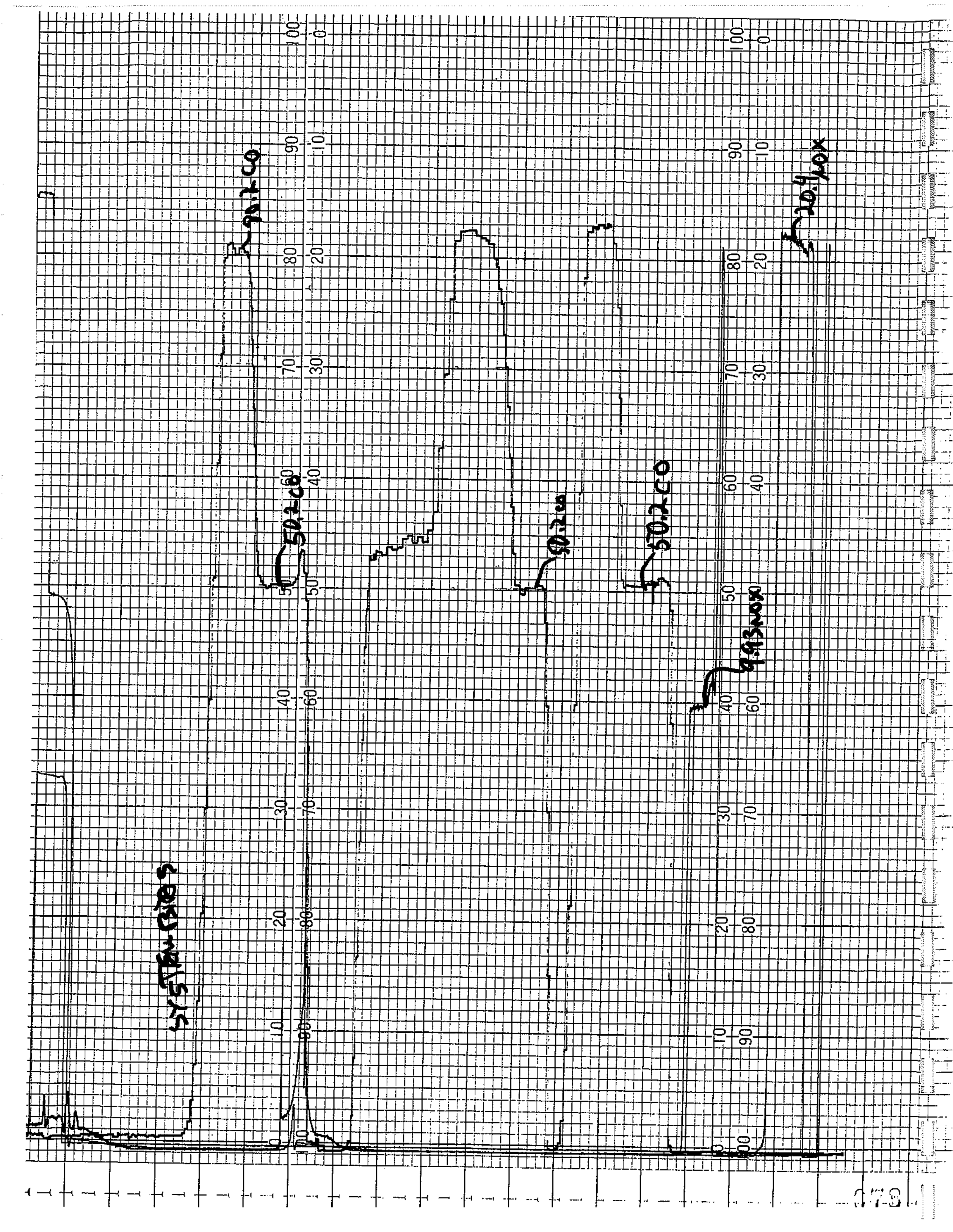


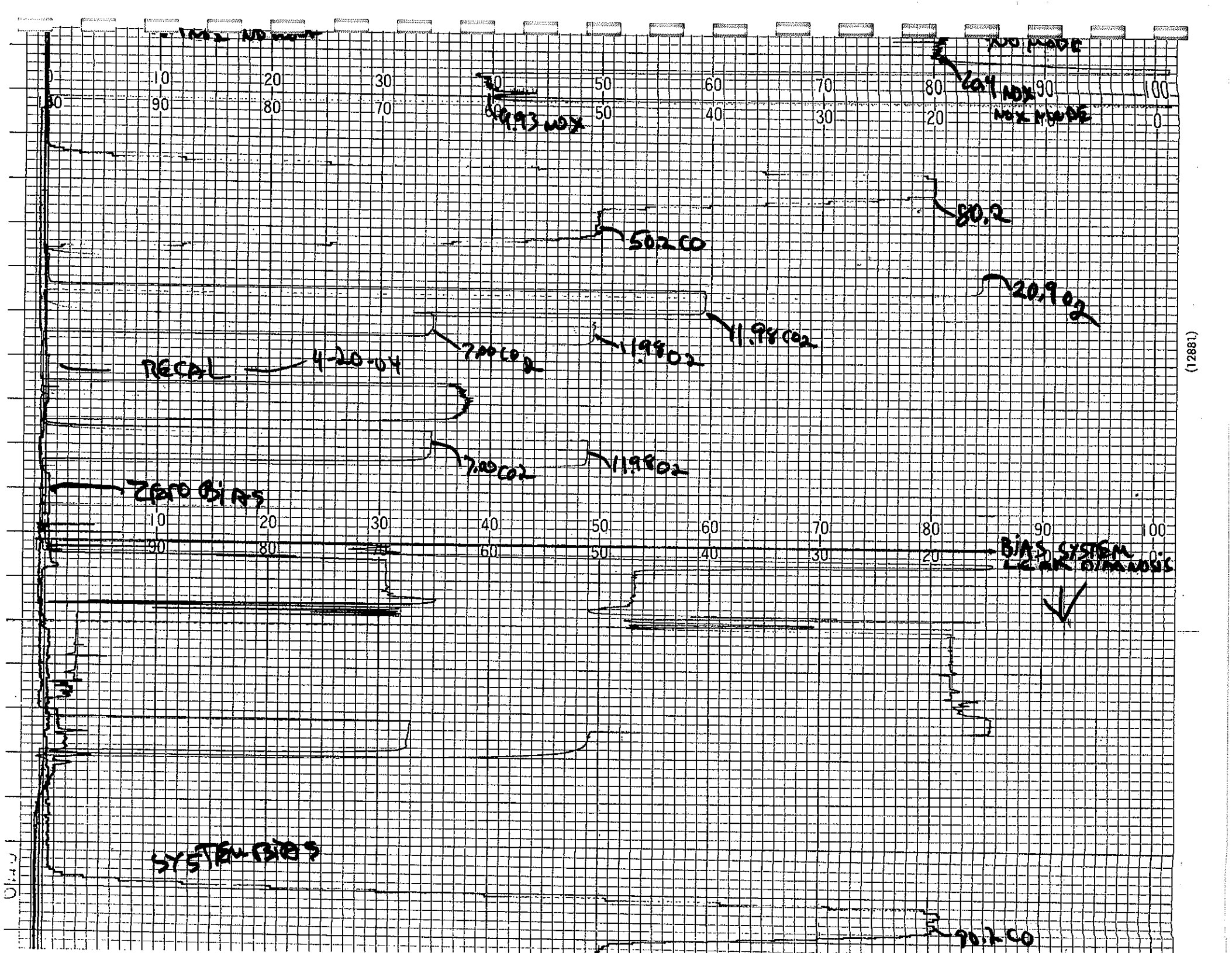
4/20/04
~~4-19-04~~ Flare #2 Bradley Landfill - Waste Management
W07-039
(SM, RC, TW

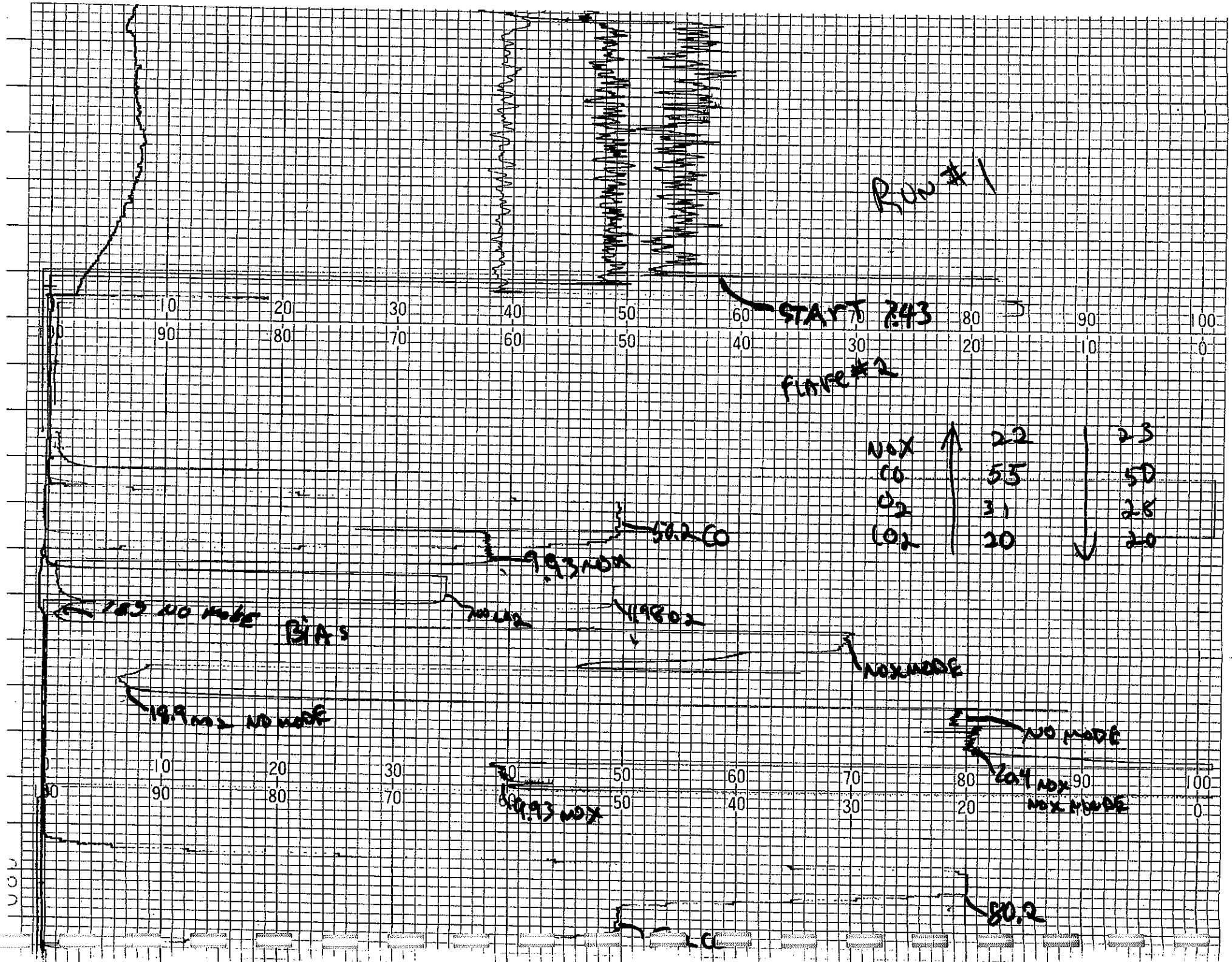
11.98 O_2 / 7.00 CO_2
11.98 CO_2
20.4 NOX
9.93 NOX
18.9 NO_2
80.2 CO / 81.8 NOX
50.2 CO / 50.4 NOX

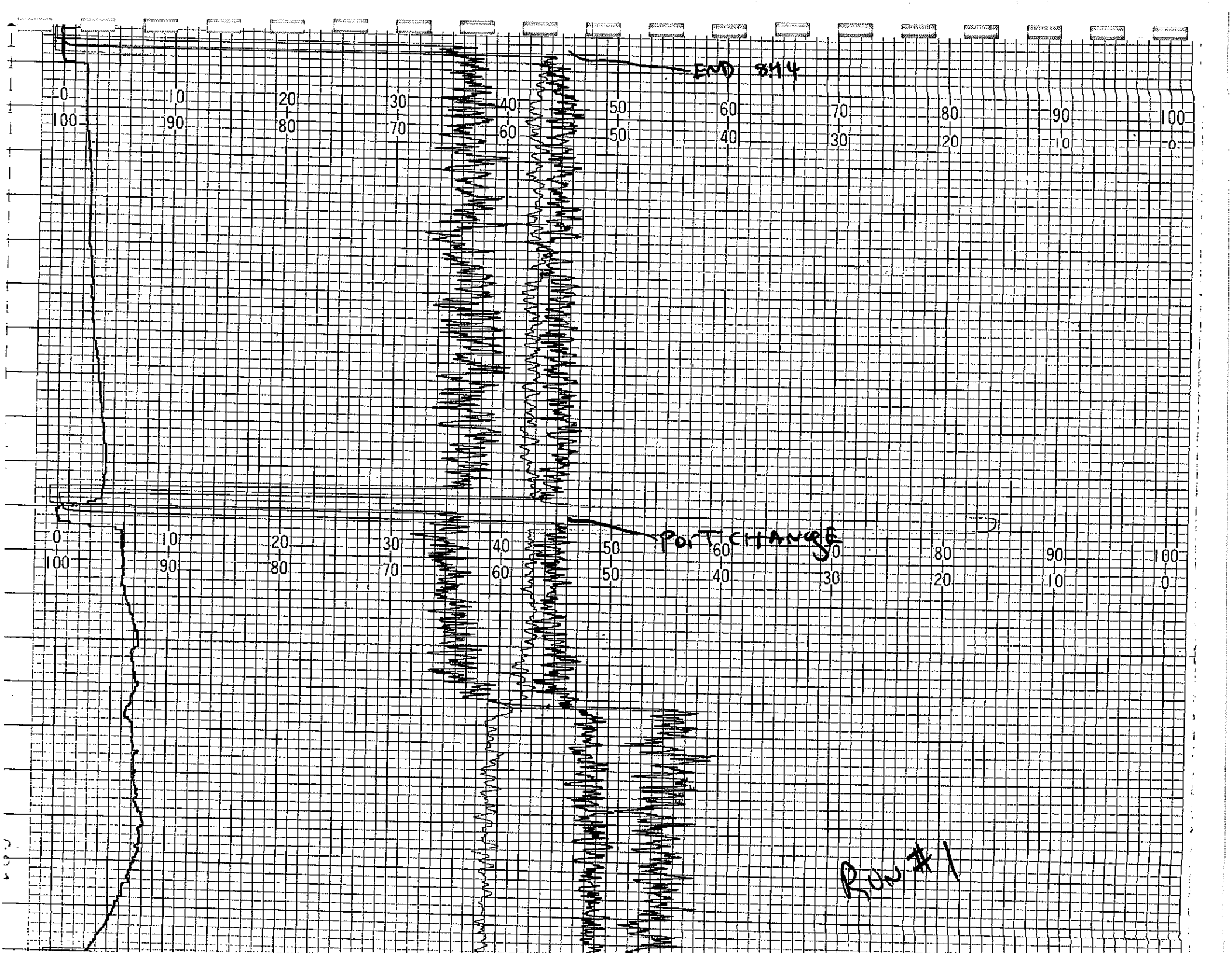
SA10110
SA17158
CC150203
CC167634
CC118326
CC92871
CC100039

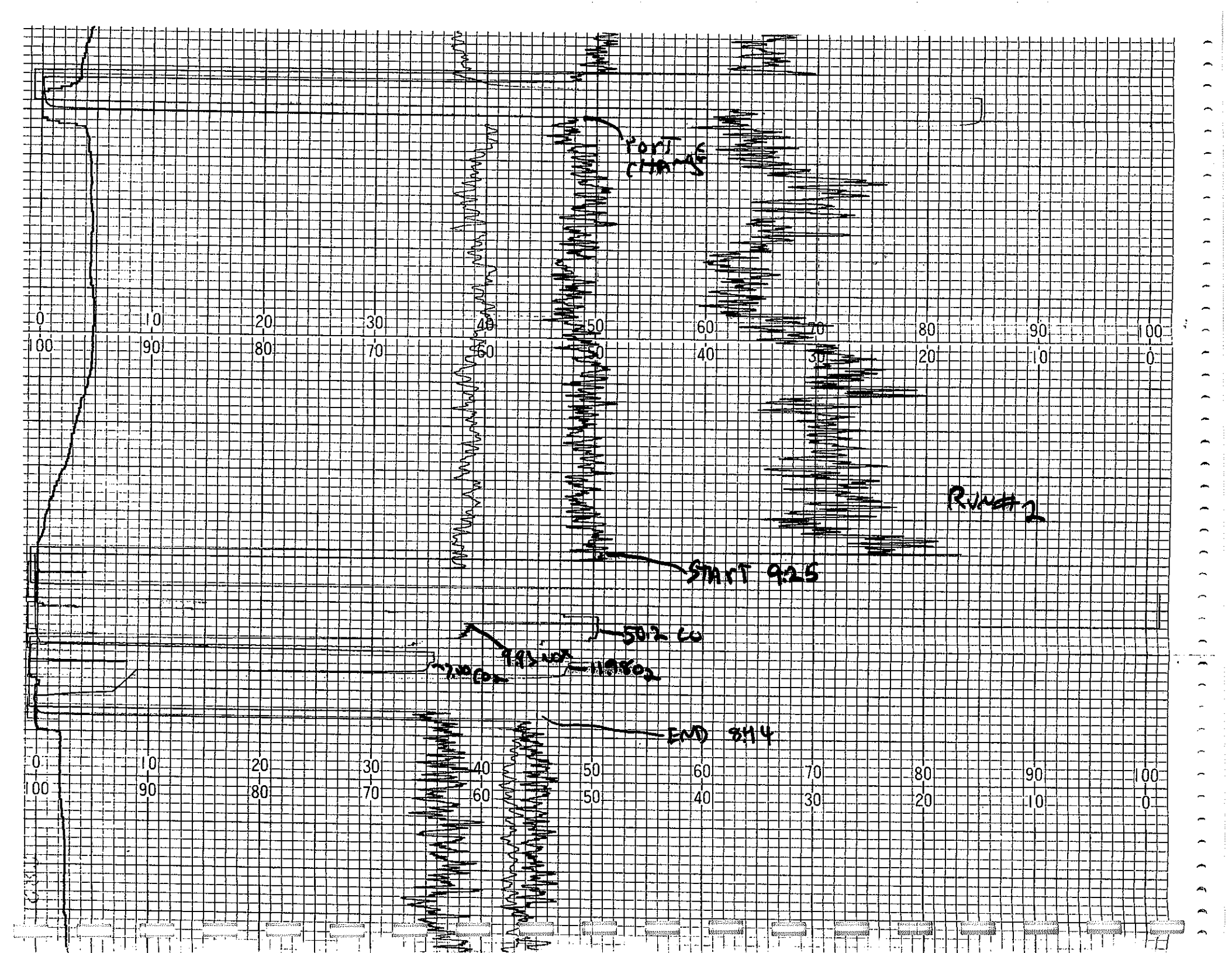

9.93 NOx
20.4 NOx
9.9 NOx
CHART PAPER MISSING SUPPORT
18.9 NO2 NOx MODE
18.9 NO2 NO MODE
NO MODE
CO MODE
20.9 O2
7.00 CO
11.9 O2
(12881)

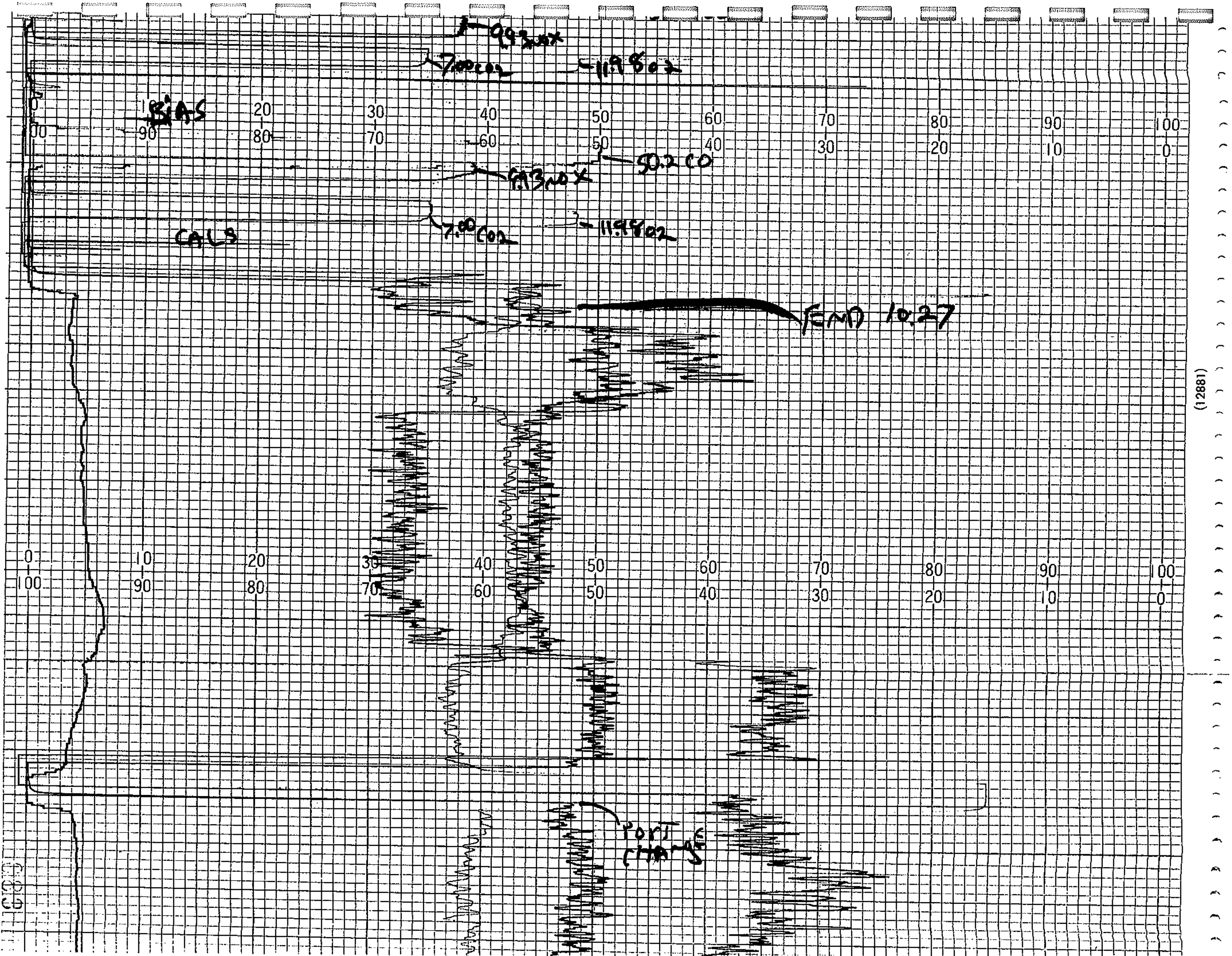

SYSTEM ZERO'S
90.1 CO
50.2 CO
50.2 CO
50.2 CO
20.4 NOX

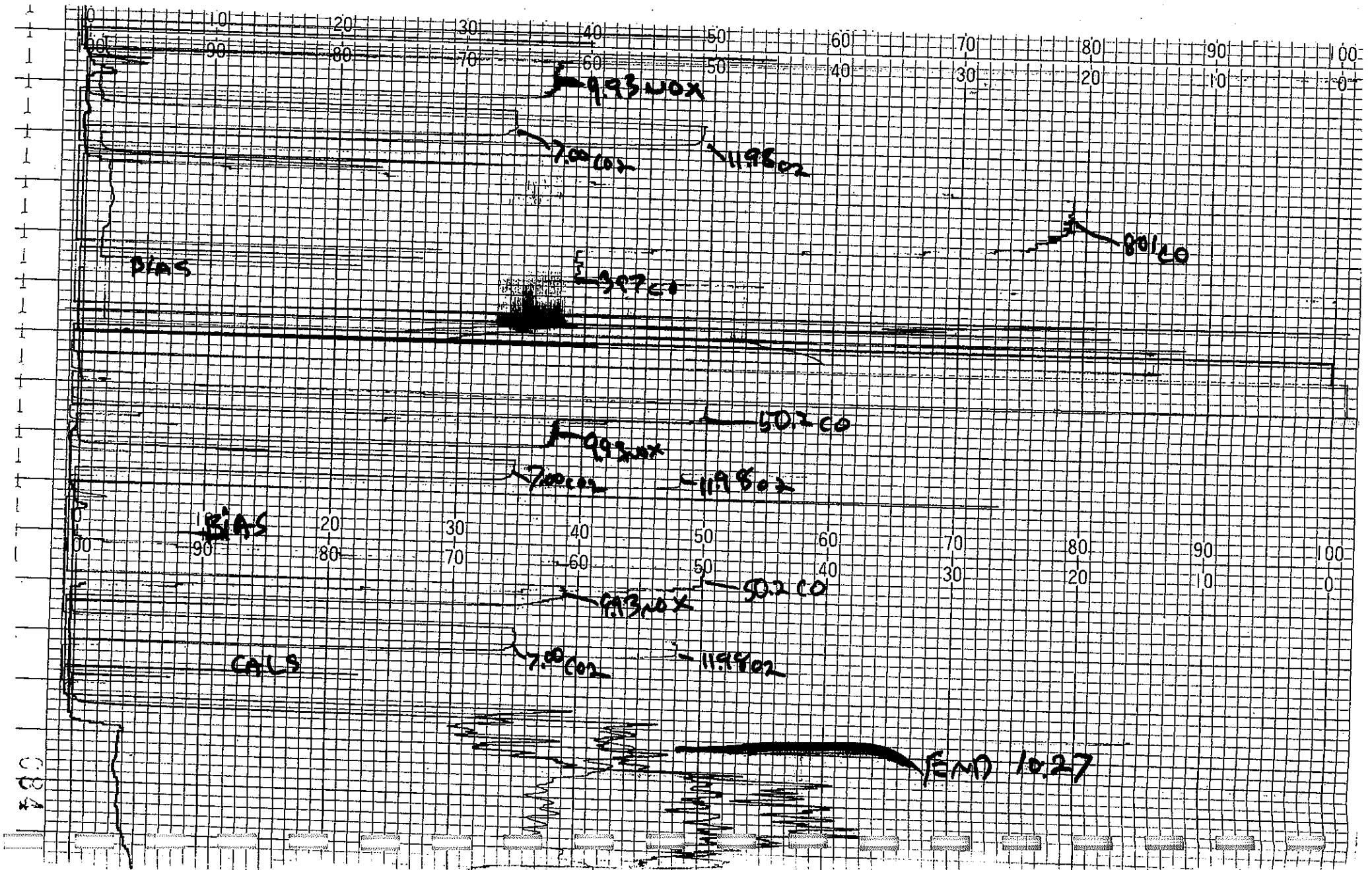

NO MODE
NOX MODE
80.2
50.2 CO
20.9 O2
11.9 CO2
7.0 CO2
11.9 O2
RECAL
4-20-04
ZERO BIAS
BIAS SYSTEM
SYSTEM BIAS
20.2 CO
(12881)


Run #1
START 2:43
FLARE #2
NOX 22 23
CO 55 50
O2 3.1 2.8
CO2 20 20
50.2 CO
9.93 NOX
19.8 O2
NOX MODE
19.9 O2 NO MODE
BIAS
NO MODE
9.93 NOX
80.2


END 3114
PORT CHANGE
RUN #1


PORT CHANGE
RUN #2
START 9:25
50% CO
9% NO
~20% CO2
~11% O2
END 9:44


7.00 CO2
BIAS
50.2 CO
7.00 CO2
CALS
END 10:27
Port change
(12881)


9.93 mOx
7.00 CO2
11.98 O2
BIAS
3.97 CO
80 CO
50.2 CO
9.93 mOx
7.00 CO2
11.98 O2
BIAS
50.2 CO
9.93 mOx
7.00 CO2
11.98 O2
CALS
END 10:27

APPENDIX G - Process Data

2.87 ~~1643~~ ~~2.564~~ ~~2.87~~

ive #2 — ☑ Copy Process Data for file

☒ Place traps in Cryo Freezer

lensate, gpm

0743

SLL LFG Flare #2 Data 04/20/07

Time	LFG Flow	T, °F	Cond. gpm
0843	1858	1572	0.0
0848	1846	1571	0.0
0853	1848	1569	0.0
0858	1854	1569	0.0
0903	1849	1576	0.0
0408	Noted that Cond. Inj @ 0.0 Abby		
0813	says this is normal in Auto Mode		
0818	1827	1567	0.0
0823	1826	1574	0.0
0828	1853	1569	0.0
0833	1863	1570	0.0
0838	1801	1567	0.0
0842	1827	1572	0.0
0857	1857	1576	0.0
0924	1869	1574	2.1
0929	1817	1567	2.2
0934	1822	1574	1.9
0939	1832	1564	1.9
0944	1836	1573	1.9
0949	1826	1567	2.1
0954	1829	1564	2.2
1005	1830	1569	0.0
1010	1856	1570	0.0
1015	1856	1569	0.0
1020	1830	1572	0.0
1025	1827	1578	1.9
1030	1844	1568	2.0
1035	1821	1574	2.0

needs to

prior

APPENDIX H - Permit to Operate

PERMIT TO OPERATE

SCS-FS
Gas Plant

Permit No.
F27480
A/N 288680

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

05-10-009043358-PHI

LEGAL OWNER
OR OPERATOR:

BRADLEY LANDFILL AND RECYCLING CENTER
9081 TUJUNGA AVE P O BOX 39
SUN VALLEY, CA 91352

ID 050310

Equipment Location: 9227 TUJUNGA AVE, SUN VALLEY, CA 91352-1542

Equipment Description:

LANDFILL GAS FLARING SYSTEM NO. 2 CONSISTING OF:

1. INLET SEPARATOR, LANDFILL GAS, TEXAS PIPE FABRICATORS, 2'-6" DIA. X 13'-7" H.

2. PARTICULATE SCRUBBER, LANDFILL GAS, TEXAS PIPE FABRICATORS, 2'-6" DIA. X 9'-3" H.

3. TWO BLOWERS, LANDFILL GAS, EACH 30 H.P., 2083 SCFM MAXIMUM.

4. FLARE NO. 2, JOHN ZINK, 8'-0" DIA. X 50'-0" H., WITH A MULTI-JET BURNER, A PROPANE GAS PILOT, ELECTRIC IGNITER, UV FLAME SENSOR, THERMOCOUPLE WITH TEMPERATURE INDICATOR AND RECORDER, AUTOMATIC SHUTDOWN AND ALARM SYSTEM, AUTOMATIC COMBUSTION AIR REGULATING SYSTEM, TEMPERATURE CONTROLLER, FLAME ARRESTOR AND FIVE CONDENSATE INJECTION GUNS

Conditions:

1) OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2) THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3) THIS EQUIPMENT SHALL BE OPERATED AND MAINTAINED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.

4) THE FLARE SHALL BE EQUIPPED WITH A TEMPERATURE INDICATOR AND RECORDER WHICH MEASURES AND RECORDS THE GAS TEMPERATURE (IN DEGREES F) IN THE FLARE STACK. THE TEMPERATURE INDICATOR AND RECORDER SHALL OPERATE WHENEVER THE FLARE IS IN OPERATION.

ORIGINAL

088

CONTINUATION OF PERMIT TO OPERATE

5) WHENEVER THE FLARE IS IN OPERATION, EXCEPT DURING START-UP, A TEMPERATURE OF NOT LESS THAN 1400 DEGREES F, AS MEASURED BY THE TEMPERATURE INDICATOR AND RECORDER, SHALL BE MAINTAINED IN THE FLARE STACK. THE THERMOCOUPLE USED TO MEASURE THE TEMPERATURE SHALL BE ABOVE THE FLAME ZONE AND AT LEAST 3 FEET BELOW THE TOP OF THE FLARE SHROUD AND AT LEAST 0.6 SECONDS DOWNSTREAM OF THE BURNER.

6) A FLOW INDICATING AND RECORDING DEVICE SHALL BE MAINTAINED IN THE LANDFILL GAS SUPPLY LINE TO THE FLARE TO MEASURE AND RECORD THE QUANTITY OF LANDFILL GAS (IN SCFM) BEING BURNED.

7) THE TOTAL VOLUME OF LANDFILL GAS BURNED IN THE FLARE SHALL NOT EXCEED 2,083 CUBIC FEET PER MINUTE.

8) WHENEVER THE CONDENSATE INJECTION STATION IS IN OPERATION, NOT MORE THAN 5 GALLONS PER MINUTE OF CONDENSATE SHALL BE INJECTED INTO THE FLARE.

9) A FLOW INDICATOR AND RECORDER SHALL BE INSTALLED IN THE CONDENSATE INJECTION STATION AND SHALL OPERATE WHENEVER THE CONDENSATE INJECTION STATION IS IN OPERATION.

10) ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF DAY.

11) THE FLARE SHALL BE EQUIPPED WITH A FLARE FAILURE ALARM WITH AN AUTOMATIC BLOWER SHUT-OFF SYSTEM.

12) THE FLARE FAILURE ALARM WITH THE AUTOMATIC BLOWER SHUT-OFF SYSTEM SHALL BE TESTED ANNUALLY FOR PROPER OPERATION AND RESULTS RECORDED.

13) A PRESSURE DIFFERENTIAL INDICATOR SHALL BE MAINTAINED ACROSS THE FLAME ARRESTOR.

14) A SUFFICIENT NUMBER OF SIGHT GLASS WINDOWS SHALL BE INSTALLED IN THE FLARE TO ALLOW VISUAL INSPECTION OF THE FLAME AND THERMOCOUPLE LOCATION WITHIN THE FLARE AT ALL TIMES. ADEQUATE AND SAFE ACCESS SHALL BE PROVIDED FOR ALL PORTS UPON REQUEST BY AQMD PERSONNEL.

15) A SET OF FOUR SAMPLING PORTS SHALL BE INSTALLED IN THE FLARE SHROUD AND LOCATED AT LEAST TWO FEET ABOVE THE FLAME ZONE AND AT LEAST THREE FEET BELOW THE TOP OF THE FLARE SHROUD. EACH PORT SHALL BE INSTALLED AT 90 DEGREES APART AND SHALL CONSIST OF FOUR INCH COUPLINGS. ADEQUATE AND SAFE ACCESS TO ALL TEST PORTS SHALL BE PROVIDED BY THE APPLICANT WITHIN 24 HOURS OF A REQUEST BY THE AQMD TO CONDUCT A TEST.

16) A SAMPLING PORT, OR OTHER METHOD APPROVED BY THE AQMD, SHALL BE INSTALLED AT THE INLET GAS LINE TO THE FLARE.

ORIGINAL

CONTINUATION OF PERMIT TO OPERATE

17) THE APPLICANT SHALL CONDUCT A SOURCE TEST ANNUALLY OR PER THE APPROVED 1150.1 COMPLIANCE PLAN. THE TEST SHALL BE PERFORMED IN ACCORDANCE WITH AQMD APPROVED TEST PROCEDURES. THE TEST SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, A TEST OF THE FLARE FOR:
A. LANDFILL GAS COMPOSITION AND HEATING VALUE.
B. LANDFILL GAS FLOW RATE, SCFM (INLET)
C. TOTAL SULFUR COMPOUNDS AS H2S, PPMV (INLET)
D. TEMPERATURE, F (EXHAUST)
E. FLOW RATE, DSCFM (EXHAUST)
F. NOX, LBS/HR AND LBS/MMBTU (EXHAUST)
G. SOX, LBS/HR (EXHAUST)
H. CO, LBS/HR (EXHAUST)
I. PM, LBS/HR AND GR/DSCF (EXHAUST)
J. TOTAL NON-METHANE ORGANICS, LBS/HR, INLET AND EXHAUST
K. RULE 1150.1 TOXIC COMPOUNDS, PPMV, INLET AND EXHAUST

18) EMISSIONS OF NOX FROM THE FLARE SHALL NOT EXCEED 0.06 LBS MILLION BTU OF HEAT.

19) THE SKIN TEMPERATURE OF THE FLARE SHROUD WITHIN FOUR FEET OF ALL THE SOURCE TEST PORTS SHALL NOT EXCEED 250 DEGREES F. IF A HEAT SHIELD IS REQUIRED TO MEET THIS REQUIREMENT, ITS DESIGN SHALL BE APPROVED BY THE AQMD PRIOR TO CONSTRUCTION. THE HEAT SHIELD, IF REQUIRED TO MEET THE TEMPERATURE REQUIREMENT, SHALL BE IN PLACE WHENEVER A SOURCE TEST IS CONDUCTED BY THE DISTRICT.

20) ANY BREAKDOWN OR MALFUNCTION OF THE LANDFILL GAS FLARE STATION RESULTING IN THE EMISSION OF RAW LANDFILL GAS SHALL BE REPORTED TO THE AQMD WITHIN ONE HOUR OF OCCURRENCE, AND IMMEDIATE REMEDIAL MEASURES SHALL BE UNDERTAKEN TO CORRECT THE PROBLEM AND PREVENT FURTHER EMISSIONS INTO THE ATMOSPHERE.

21) EMISSIONS RESULTING FROM FLARE NO. 3 SHALL NOT EXCEED THE FOLLOWING:

ROG 0.66 LBS/HR
NOx 2.58 LBS/HR
SOx 3.16 LBS/HR
CO 2.37 LBS/HR
PM10 1.31 LBS/HR

22) ALL RECORDS SHALL BE KEPT FOR A PERIOD OF AT LEAST TWO (2) YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST. A RECORD OF THE HOURS OF FLARE OPERATION SHALL BE INCLUDED.

23) FLARE START-UP TIME SHALL NOT EXCEED 30 MINUTES. ANY OUTAGE THAT RESULTS IN THE SHUTDOWN OF THE FLARE SHALL NOT BE CONSIDERED A BREAKDOWN PROVIDING NO EMISSION OF RAW LANDFILL GAS OCCURS.

24) MITIGATION MEASURES, OTHER THAN THOSE INDICATED IN THESE CONDITIONS, WHICH ARE DEEMED APPROPRIATE BY AQMD PERSONNEL AS NECESSARY TO PROTECT THE COMFORT, REPOSE, HEALTH OR SAFETY OF THE PUBLIC, SHALL BE IMPLEMENTED UPON REQUEST.

ORIGINAL

PERMIT TO OPERATE

CONTINUATION OF PERMIT TO OPERATE

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M. Bailey/tk01
4/11/2000

ORIGINAL